6-2016

BRINGING THE WONDER OF NATURE BACK TO EARLY CHILDHOOD CLASSROOMS

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BRINGING THE WONDER OF NATURE BACK TO EARLY CHILDHOOD CLASSROOMS

A Project

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Child Development

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by

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ABSTRACT

Current research suggests that time spent in nature benefits all aspects of children's development. However, children are spending little time outdoors. Additionally, there are few preschool programs that recognize the outdoors as an extension of the traditional classroom and even fewer college courses and training programs that specifically address outdoor education. The purpose of this project was to educate early childhood teachers about nature's benefits and provide them with the knowledge necessary to implement their own outdoor classrooms. The trainings focused on seven topics related to the importance and development of an outdoor classroom: introduction to the outdoor classroom, benefits of nature and the consequences of its removal, developmental theories related to children's learning outdoors, outdoor curriculum and activities, teacher engagement, outdoor assessment, and implementing an outdoor classroom. Pre- and post-training assessments indicated that the training increased teachers' perceived knowledge about outdoor classrooms, their likelihood of engaging in positive teaching behaviors outdoors, and their confidence regarding the implementation of an outdoor classroom. Overall, the trainings accomplished the desired effect of educating teachers on the importance of an outdoor classroom. However, few of the teachers who initially signed up for the training completed the four sessions. Future trainings might consider offering larger incentives, condensing the number of sessions and information provided, and/or including center directors and administrators as participants in order to recruit more

participants and increase the likelihood that outdoor classrooms will be implemented at more centers.

ACKNOWLEDGMENTS

It is with great admiration and gratitude that I thank my project chair, Dr. Laura Kamptner, for all of her patience, dedication and guidance throughout the completion of my project. Without her my project would be incomplete.

I would also like to thank my committee members Dr. Amanda Wilcox and Dr. Eugene Wong for encouraging me to step outside of my comfort zone and providing the support necessary to do so. CSUSB has some of the most amazing faculty and I am lucky to call three of the best my mentors.

My family deserves more than a thank you for putting up with my “piles” of work strewn throughout the house, enduring my bouts of stress and calls for better coffee and undying devotion to support me in all of my endeavors, no matter what it is I feel called to do.

This project would have remained unfinished without the support of Brad Moon and Dodger, who have kept me sane and grounded. A thank you would never suffice. You are the calm to my storm and a true gift from God. I can’t wait to spend the next 30 years paying off student loans with you!

Lastly, I would like to thank my friends, coworkers, babies and parents of ITLS. Working with you for the last four school years has been an incredible experience that has truly made me a better human. Thank you for letting me put my research into practice. Ultimately this project is for all of you and I hope ITLS enjoys many years of outdoor learning.

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CHAPTER ONE

INTRODUCTION

The importance of children's contact with nature has been discussed for decades; however, a vast number of schools are choosing to minimize, or eliminate, the amount of time children spend outdoors (Louv, 2008). Despite evidence that outdoor environments contribute to children's optimal development, traditional, indoor classrooms are still viewed as the ideal environment for education to take place. The purpose of this project is to create a series of workshops designed to educate current early childhood teachers about the benefits of nature to children and establish the outdoors as an important second learning environment.

Since the beginning of time, humans have relied on the natural environment for survival. From the early hunters and gatherers to the colonists who settled in America, contact with nature has been an integral part of human life. However, a notable shift happened around the early seventeenth century: the beginning of the Industrial Revolution (Louv, 2008; Rivkin, 1998). Instead of rising with the sun to sustain life on a farm, people increasingly moved indoors to manage machines and maintain assembly lines. Since then, humans have continued to be removed from the world around them. Today, the average American spends as much as 95% of their time indoors (Cohen, 1984). Additionally, 54% of people live within an urban society, largely removed from the tranquility of nature (World Health Organization, 2014). Though urbanization has

afforded a new kind of sustainability for society, it has also introduced humans to a life of constant and inappropriate stimulation. In a study conducted by the University of Michigan, researchers found that time spent in a city produced an inappropriate heightening of participants' senses, resulting in decreased concentration and self-discipline (Berman, Jonides, & Kaplan, 2008). This suggests that individuals need nature to refocus their attention, which is currently being drawn in different directions with the large amount of time spent indoors.

Despite this need for nature, children spend an average of eight hours a day engaged with technology, regardless of the American Academy of Pediatrics (AAP) suggestion to limit screen time to no more than 1-2 hours per day (Sobel, 2016, p. 108). In addition, 30,000 schools across the United States eliminated recess in response to the No Child Left Behind Act and the push for higher test scores, rationalizing that less time spent engaging in recess would lead to more productive time spent in the classroom (Louv, 2008; Sobel, 2016). And, in response to increasing sensitization about stranger danger and child abductions, parents have taken away the free-range childhoods that previous generations were allowed (Louv, 2008; Rivkin, 1998). As a result, children's leisure time has become plagued by organized sports and activities, which, combined with the excessive use of technology, means that children are left with little (if any) time to enjoy the outdoors, resulting in a mind that is constantly over-stimulated with no chance to take a break from the noise.

These facts are startling when considered alongside evidence that suggests that of the 6.4 million children diagnosed with ADHD in the United States, 40% may be over-diagnosed (CDC, 2011; Louv, 2008). Additionally, the prevalence of obesity among children has become so great that pediatricians now warn that this may be the first generation of children since World War II to die before their parents (Louv, 2008, p. 47). Both of these health risks have shown reduced, or eliminated, symptoms when children have regular contact with green spaces in nature and time outdoors, which has been linked to increased overall concentration and physical activity (Martensson et al., 2009; McCurdy, Winterbottom, Mehta, & Roberts, 2010; Taylor & Kuo, 2009; Van den Berg & Van den Berg, 2010). As a result, Louv (2008) made the bold statement in his book *Last Child in the Woods* that what children are actually suffering from is something he defines as “nature-deficit disorder”—a disorder marked by “diminished use of the senses, attention difficulties, and higher rates of physical and emotional illness” (p. 36) and that, instead of medication, what children actually need is time spent outdoors.

Children’s need to connect with nature is not novel to Louv’s (2008) assertions, nor is the idea that children suffer when nature is removed from the equation new. A number of developmentalists and other psychologists over the last century have also supported this idea including Dewey, Montessori, Froebel, Erikson, and Gardner. John Dewey found experience to be central to education and viewed the outdoors as a place in which the possibilities were endless

(Rivkin, 1998). Dewey felt that the Industrial Revolution changed childhood forever, denying children the discipline and character that he believed came with the opportunity to work and learn outdoors. He felt that replacing this experience with learning restricted individual development, which was similar to the factory work that had taken over society (Rivkin, 1998). Real learning, Dewey postulated, takes place outdoors because that is where life occurs; lessons taught indoors cannot compare to real-world experiences because they lack connection with the very materials teachers are trying to engage children with (Rivkin, 1998).

Maria Montessori also felt that children learn through real work and advocated for child-sized tools for use in the classroom (Mooney, 2013, p 39). She was an advocate of beautiful spaces for children and saw the outdoor environment as a place that naturally stimulated the senses. She noted that natural settings invigorate children's senses, and gardening results in many rich learning opportunities for children because it allows children to choose their work based on their interests (Crain, 2001; Mooney, 2013). Montessori believed that proper physical and psychological development could only come from immersion in nature, and that children should be given large blocks of open-ended time to experience and engage with the world around them (Johnson, 2013; Mooney, 2013). When teachers consciously make an effort to allow children to demonstrate their competence and use real tools in their explorations, true

learning can take place and connections with the environment can be established (Mooney, 2013).

Friedrich Froebel, like Montessori and Dewey, also believed that children learn best by doing. Though Froebel subscribed to the idea that children's parents were their first teachers, he believed that children benefited from exposure to a wider community (Joyce, 2012). Froebel felt this community included experiences in nature, and that children needed an environment in which they could initiate learning experiences appropriate to where they were in terms of overall development. These ideas led Froebel to establish the kindergarten in 1837, which he defined as a place in which children could develop through "gifts" and "occupations" (Joyce, 2012). In Froebel's kindergarten, every child was given a small plot of land in which they could plant and garden goods to benefit society (Joyce, 2012). Froebel's kindergarten was both a garden of, and a garden for, children, with an emphasis placed on child initiation of activities and learning through real experiences (Weston, 2000). In addition, children took part in daily excursions into the farms, fields, and forests surrounding them, affording them the opportunity to both experience and form a connection with nature (Joyce, 2012). These connections to the natural world promoted holistic development in the form of play, which Froebel saw as children's work (Joyce, 2012).

Though Erik Erikson was a stage theorist who did not write specifically about children's connection with nature, two of his early stages can be connected

to the ideas shared by Montessori and Froebel. After establishing the basic sense of trust vs. mistrust in their first year of life, Erikson felt that children are faced with the opportunity to develop autonomy vs. shame and doubt (Mooney, 2013). Montessori acknowledged this need of children by awarding them with experiences to use real tools and demonstrate competence without the constant intervention of a teacher. Froebel also allowed children the opportunity to develop autonomy by recognizing that children's learning and development can take place during play, a time in which children's learning is separate from their parents, who Froebel acknowledged as children's first teachers (Joyce, 2012). Once children establish autonomy, Erikson believed they face the psychosocial task of initiative vs. guilt. By allowing children to plant and develop their own gardens, as well as by allowing children countless experiences within their natural environment, both Montessori and Froebel awarded children the opportunity to develop initiative, trusting children to take their learning and experiences into their own hands. Though Erikson's early theories are not specific to children's connection with nature, the experiences offered by a natural environment promote skills which Erikson saw as critical to children's development.

It is not only early developmentalists who recognized human's need for connection to the natural environment. Howard Gardner, who created the theory of multiple intelligences in 1983, emphasized that intelligence is more fluid than originally thought, and is better understood as different skill sets rather than a

general ability (Gardner, 2011). Though Gardner's theory originally included only seven forms of intelligence, in 1996 he added "naturalist" intelligence. Gardner noted that some people have a natural affinity toward nature and are skilled at recognizing and classifying information they gather from their environment (Checkley, 1997). These individuals show a strong desire to be outdoors and thrive on hands-on experiences. Though Gardner's theory now includes nine alternate forms of intelligence, it is notable that the first to be added to his theory stemmed from a connection to the environment.

Unlike Gardner's belief that some humans are more innately drawn to nature than others, Edward O. Wilson believes that all humans are instinctively drawn to the natural world (Wilson, 1984). He noted that this need emerges in early childhood and carries on throughout life. Because of this, Wilson believed contact with nature is a fundamental need that is genetically wired within humans. He refers to this as the "biophilia" hypothesis (Wilson, 1984; Kahn, 1997). Biophilia is supported by research that shows a strong human response to wide-open, natural spaces, and positive physical responses to even the smallest view of nature; an idea that dates back to ancient Chinese Taoists who planted lush, green gardens with the belief that such views preserve health and promote mental stability (Louv, 2008; Kahn, 1997).

Despite this seemingly innate connection, however, a shift in children's response towards nature is emerging. Researchers note that children today are becoming increasingly inclined towards "biophobia," rather than "biophilia."

Biophobia is characterized by a fear of the natural world and ecological problems (Orr, 1994; White, 2004) that developmentalists suggest can be bred by the increasing pressure for young children to study the world's ecological problems before they are developmentally ready (Kahn, 1997; Sobel, 2013; Wilson, 2008). The solution, then, seems to be that early childhood educators must first teach children and their parents to love the world before children are pressured to save it (Sobel, 2013, p. 47). This love for nature can only be imparted to early childhood classrooms once teachers begin to understand the countless benefits contact with nature has for young children.

Benefits of Contact with Nature for Young Children

There are numerous benefits of contact with nature for children including cognitive development, social/emotional development (including the development of autonomy), and physical development, assisting children in managing stress, and facilitating the development of an environmental ethic. The National Association for the Education of Young Children (NAEYC) advocates for the support of whole-child development, a philosophy that encourages teachers to look at the child as a whole rather than as a series of parts to be developed (Copple & Bredekamp, 2009). Whole-child development emphasizes that multiple areas of development can be taught or accessed simultaneously rather than teachers concentrating on a single area of development at a time. Time in nature affords children the opportunity to develop as a whole given the variety of experiences offered outdoors.

Cognitive Development and Attention

Nature appears to have a restorative effect on cognitive development that affords children the opportunity to improve attention and cognitive functioning (Kaplan, 1995; Taylor, Kuo & Sullivan, 2002; Tennessen & Cimprich, 1995; Wells & Evans, 2003). Utilizing William James' theory that there are two main types of attention, voluntary and involuntary, and the idea that voluntary attention requires considerable mental effort to sustain attention, Kaplan and Kaplan (1982) proposed that attentional fatigue could result from prolonged efforts to maintain focus on voluntary (or directed) attention. According to Kaplan and Kaplan (1982), prolonged periods of directed attention result in overuse of the neural inhibitory mechanism, resulting in a mind that is mentally fatigued and in need of recovery. On the contrary, involuntary attention results from stimuli that are effortlessly engaging, allowing the mind a chance to rest and recover. Stephan Kaplan (1995) called this Attention Restoration Theory and noted that natural settings rely on involuntary attention and, therefore, contact with nature should promote the restoration of the neural inhibitory system and assist in recovery from fatigue (Taylor et al. 2002).

Based on the notion that extended periods of directed attention result in mental fatigue, Taylor, Kuo and Sullivan (2001) proposed that Attention Restoration Theory could also apply to children who undergo long periods of deliberate, effortful attention at school (p. 58). They felt children might benefit from natural environments that allow children the opportunity to restore their

ability to maintain attention (Taylor et al., 2001). Taylor, Kuo, and Sullivan (2001) asked parents of children with ADD to reflect on activities their children engaged in that 1) increased their children's functioning, and 2) decreased their children's functioning in terms of their ADD symptoms. Results indicated that activities mentioned by parents as most likely to reduce their children's symptoms of ADD were disproportionally more likely to take place outside, whereas activities that exacerbated symptoms of ADD were most likely to take place in indoor settings, suggesting that contact with natural elements has a restorative effect on cognitive functioning and ability to direct attention in children with ADD as well (Taylor et al., 2001, p. 71). This is consistent with subsequent research which has found that children with ADHD concentrate better after a walk in the park, whereas children who took a walk downtown or within a residential setting did not benefit from such effects on their attention (Taylor & Kuo, 2009).

Nearby nature has also been examined in terms of the restorative benefits it offers to children who face environmental challenges due to poverty. In 2000, Wells examined the effects of nature on low-income children whose families took part in a self-help housing program in which families were moved from homes largely absent of natural elements into homes surrounded by more natural elements. In this study, mothers answered 46 questions related to their children's ability to focus or redirect attention both prior to moving and approximately one year after relocation. Researchers utilized the Attention Deficit Disorders Evaluation Scale (ADDES), which includes items such as, "Starts but does not

complete homework," and takes children's age into consideration, negating the potentially confounding fact that children were older in the second evaluation than they were in the first. Wells found that children whose homes increased the most in terms of natural elements showed the greatest improvement in cognitive functioning and their ability to direct attention several months after moving, suggesting that natural environments contribute to children's ability to direct attention and restore cognitive functioning (Wells, 2000). Given that nature helps restore one's ability to focus attention and utilize neural inhibitory mechanisms, nature may offer children the ability to think more clearly and handle stress more effectively when compared to children who have limited access to nature (Kaplan & Kaplan, 1982; Kaplan, 1995; Wells & Evans, 2003).

Time spent in nature may also effect teacher's evaluation of children and children's performance. The Foundation Phase for Wales advocates for a play-based approach to learning that is heavily based on child-initiated learning experiences in the outdoor environment (Maynard, Waters, & Clement, 2013). Their research on this approach indicates that children considered underachieving by teachers were suddenly able to exhibit skills and behaviors previously absent when activities were moved outdoors (Maynard, Waters, & Clement, 2013). In their reflections, teachers noticed that these children displayed more positive responses, increased their concentration, engagement, focus, and perseverance, and were more cooperative with peers when engaged in child-initiated learning outdoors (compared to their typical behavior during

normal classroom experiences) (Maynard, Waters, & Clement, 2013). In sum, children previously thought of as underachieving became self-initiated learners outdoors, impacting children's overall performance and teachers' evaluations of their abilities.

Social/Emotional Development

When children are afforded time to play outside, they benefit from experiences that both increase their autonomy and promote the development of social relationships (Hartle et al., 1994; Hüttenmoser, 1995; Rivkin, 1998; Waite, Rogers, & Evans, 2013). This is partially due to the fact that when outside, children have more space to spread out and move around, thereby enabling them to choose when to enter and exit certain playgroups and decreasing instances of aggression and frustration (Hartle et al., 1994; Rivkin, 1998). Additionally, teachers are less likely to dominate children's play outdoors, allowing children to feel more in control of their environment and to be more likely to develop social competencies not readily demonstrated indoors (Waite, Rogers, & Evans, 2013). This is similar to Hüttenmoser's (1995) research which found that unsupervised access to the outdoors was related to the number of friends children have. In his study, Hüttenmoser (1995) found that children who have unsupervised access to the outdoors at home have twice as many friends as those whose outdoor access was limited or unavailable. The self-directed nature of outdoor play provides children opportunities to test and develop the skills

necessary for navigating social relationships without adult domination while promoting the development of autonomy (Nelson, 2012).

In addition to increased autonomy and access to peers, there are links between the types of play children engage in outside and the development of peer relationships. Lindsey (2014) found that children who had the opportunity to engage in physically active play in preschool may be more prepared to form positive peer relationships once they enter school. Additionally, the physical risks that children take outdoors foster self-confidence as children learn how to effectively manage risks and trust their own judgment (Little & Wyver, 2008). Tovey (2007) argued that a child who is capable of taking physical risks might be an incompetent social risk taker, but the confidence gained from taking physical risks might encourage the child to take social risks and, thus, promote social development as well. When children are allowed the freedom to trust themselves and navigate potentially dangerous situations on their own, autonomy is supported and developed, increasing self-esteem and self-confidence (thereby allowing children to take more risks, whether physically or socially).

In addition to taking more social risks, children's outdoor play is more egalitarian and less evident of stereotypical gender roles (Louv, 2008; Miller, Tichota, & White, 2013). Waite, Rogers, and Evans (2013) believe that since there is less adult domination outdoors, children are offered the freedom to "try out different ways of being" (p. 259). Miller, Tichota, and White (2013) looked at teachers' observations of children's play outdoors and found that, without the

immediate presence of an adult, both boys and girls assumed leadership roles during play and that children's play was highly inclusive. Without adult intervention, children invited peers to enter into their play situations and welcomed others who wanted to join in, suggesting that unstructured time to play outdoors allows children numerous opportunities to develop their interpersonal skills on their own (Miller, Tichota, & White, 2013).

Physical Development

The active nature of the outdoor environment encourages children to develop their physical competencies in a way that is both pleasurable and risky. To begin, natural environments provide a more dynamic playscape than indoor experiences. The presence of rocks, slopes, uneven surfaces, and natural obstacles allows children more opportunities to negotiate and advance their physical capacities than do flat surfaces. For instance, Fjortoft (2004) found that children who played in a complex, natural environment showed enhanced balancing and coordination abilities at the end of the school year compared to children who played on a traditional playground. The complexity of the outdoors allows children to experiment with movement, and it enhances their physical capabilities more than a traditional playground since the environment is challenging and encourages children to take risks.

Though risk-taking is not directly related to children's physical development, children are most likely to take risks in regards to their physical capabilities outdoors. As children move and navigate through certain challenges,

they develop a body-brain connection that enables them to understand how their body works in relation to their environment, and, in turn, what they are capable of (Connell & McCarthy, 2014). Louv (2008) defines this as “instinctual confidence.” He felt that in a world surrounded by visual stimuli, children’s senses are narrowed, leaving them with little room to develop the skills necessary to detect real danger. Physically risky play enables children to attune to their senses and trust their instincts while furthering their physical development. When risk is reduced, however, challenge and excitement are often eliminated, decreasing the amount of potential learning experiences children are exposed to and decreasing physical development (Little & Wyver, 2008).

Rough-and-tumble play is an experience often associated with risk that is important to children’s development. Rough-and-tumble play is a type of physically active play that would appear aggressive if it was not for the playful context it takes place in. It is often distinguished from physical aggression by the presence of a “play face,” or a face that indicates cheerfulness (such as through smiling) on all of the children engaged in the play (Pellegrini & Smith, 1998; Tannock, 2008). Past research indicates that educators recognize this type of play as important to children developing self-control, compassion, and boundaries, and the ability to make judgment calls related to their own and others’ capabilities. However, educators are reluctant to allow it in an academic setting because they are unsure of how to manage it and they feel pressure to maintain safety and ensure that no one gets hurt (Tannock, 2008). This hesitancy

was also seen in an early edition of NAEYC's guide for developmentally-appropriate practice which cautioned teachers to watch for and prevent overstimulation in children, such as when they are engaged in wrestling (Bredekamp, 1987, p. 74). Recent editions, however, support the presence of rough-and-tumble play and risk-taking so long as it is supervised to ensure safety because play is recognized as an important aspect of children's development (Copple & Bredekamp, 2009). Children who engage in rough-and-tumble play benefit emotionally, cognitively, and physically as they negotiate and assess their own and others' skills while maintaining a positive social dynamic (Carlson, 2011).

Stress Management

Copple and Bredekamp (2009) consider stress management to be an important factor in developing children's emotional competencies but note that resiliency is often different between children experiencing the same levels of stress due to individual characteristics such as temperament. Outside of inborn characteristics, however, some studies indicate that nearby nature acts as a buffer to life stressors in children and may promote resiliency (Wells & Evans, 2003). Through a series of interviews and questionnaires with both children and their mothers, Wells and Evans (2003) assessed life stressors in children's lives, the psychological impact of such stressors, and the effects of nearby nature. They found that children living in areas high in nature seemed to be protected

from the adverse effects of life stressors, and that this effect was greatest for those experiencing the highest amount of stress (Wells & Evans, 2003, p. 322).

Kuo (2001) also looked at the buffering effects of nearby nature on life stressors specific to poverty but used adults in her sample. She found that participants most commonly mentioned parenting problems as a major worry or concern in their lives, and that those who lived in areas largely lacking in nearby trees and grassy areas reported their problems as more severe, persistent, and invasive than those with greener surroundings, suggesting that those who live in areas with nearby nature may be better able to cope with the negative effects of poverty (Kuo, 2001). This suggests that nearby nature may have a two-fold effect on children, i.e., both buffering children from immediate life stressors and engaging parents in the restorative benefits of refocusing their attention and allowing better management of major life issues (Kuo, 2001; Wells & Evans, 2003).

Environmental Ethic

Decreased time spent in nature diminishes children's affiliation with the natural world and reduces the impact of environmental education programs. David Sobel (2013) proposed that if we are to teach children how to save the world, we must first teach them how to love it (p. 47). He argued that education should be approached in a way that develops children's academic and social competencies while simultaneously fostering their love for the earth (Sobel, 1998, p. 3). Previous research suggests that while environmental education programs

have an immediate impact on children's environmentalism, the effects are short-term (Jaus, 1982). The approach Sobel (1998) proposes is consistent with research by Wells and Lekies (2006), who found that the most significant predictor of children's lifelong environmental efforts is their interaction with both "wild" nature (e.g., hikes, playing in the woods, camping, hunting, etc.) and "domesticated" nature (e.g., experiences such as picking flowers, planting seeds, caring for plants, etc.). When people engaged in these behaviors prior to age 11, they were more likely to have pro-environment attitudes and engage in pro-environment behaviors (Wells & Lekies, 2006, p. 13). Conversely, as adults, participation in environmental education programs as children did not predict adult environmental attitude or behaviors (Wells & Lekies, 2006). This suggests that while environmental education programs have an immediate impact on children's feelings of environmentalism, experience with nature is the most significant predictor of lifelong environmentalism attitudes and behaviors (Jaus, 1982; Wells & Lekies, 2006).

The Teacher's Role in Reconnecting Children with Nature

Copple and Bredekamp (2009) view the teacher as playing an integral role in children's development. Given the numerous benefits nature has to offer children, it is important for teachers to both recognize and value the outdoors as an additional learning environment. According to Louv (2008), the most effective way to connect children with nature is to connect one's self with nature. This is similar to Rachel Carson's (1965) idea that children need the companionship of

at least one adult to help keep alive their inborn sense of wonder, a quality that Ruth Wilson (2008) determined to be an important motivator for lifelong learning. Countries such as Scandinavia have recognized the importance of children's opportunities to play outdoors, either restructuring their kindergartens to include more time outdoors or organizing "outdoor schools" where children spend all or most of their day outside (Fjortoft, 2001). Here in the United States, however, the push towards higher test scores have led many schools to reduce or eliminate recess from the typical school day (Elkind, 2008; Louv, 2008). Therefore, it becomes increasingly important for teachers to provide children with outdoor experiences that align with school standards and allow children the opportunity to experience nature's benefits (Sobel, 2008).

The Outdoor Classroom

Responding to the changing connection between children and nature over the last half century and the increasingly "hyperstructured, anxious children" of today, Nelson (2012) argues that the development of outdoor classrooms could allow children more responsibility for their development and potentially reduce the consequences associated with a lack of nature in children's lives (p. 15). Though 30,000 schools have eliminated recess across the United States, the schools that still employ recess do not allow children adequate time to engage in the experience and are simply viewed as a way for children to "burn off steam" (Louv, 2008). Additionally, traditional schoolyards consist of plastic play structures largely devoid of the natural elements that stimulate children's

imagination and natural curiosity to understand the world they live in, therefore negating any potential benefits the children might gain from what little time they do have outdoors (Czalczyńska-Podolska, 2014). To counteract this problem, Nelson (2012) suggests that the outdoors should be seen as an extension of the classroom and referred to as “The Outdoor Classroom” rather than “recess.” When recess is eliminated from a school’s vocabulary, it eliminates the assumption that learning does not take place outdoors and acknowledges the idea that children are always learning, even in play. Alternatively, it suggests the need for materials that actively engage children’s minds and allow for learning to take place through play. This idea requires teachers to remain engaged and supportive of children’s development once they are outdoors rather than simply act as recess monitor (Nelson, 2012). It also requires a restructuring of current play environments to include more natural elements in order to optimize children’s learning potential.

The Teacher-Nature Disconnection

Although nature has been found to be beneficial to children’s development, few schools utilize a program that values children’s time spent outdoors, and traditional early childhood education trainings and programs do not include viewing the outdoors as an additional classroom space (Hoffmann, 1969; Nelson, 2012). While many teachers are well-versed in how to implement a curriculum that takes place inside the traditional classroom, they are at a loss when it comes to engaging children outdoors. Past and current research

suggests two main reasons for the slow progress in the development of outdoor education programs in schools. First, until recently, there has not been a need for education to take place outdoors (Hoffman, 1969; Louv, 2008, McClintic & Petty, 2015). Children used to spend ample time outdoors and were surrounded by green space, but the same opportunities children once had to engage with nature are quickly disappearing. Additionally, 60% of children ages 0-5 spend time in "nonparental care programs" with a majority of those children spending an average of 35 hours in such care (McClintic & Petty, 2015, p. 24). This extended time spent in child care suggests that the only time children have contact with nature is while in a daycare or school program; thus, making the problem more pronounced than in the past (McClintic & Petty, 2015). Second, teachers feel insecure in their ability to provide meaningful outdoor experiences for children and adequately supervise them due to large class sizes and little knowledge about how to create such experiences (Dyment, 2005; Hoffman, 1969; Wade, 1996). Few teachers have encountered information on outdoor education during their schooling. Those who have received additional training note that current programs focus more on what teachers should be teaching rather than helping teachers understand how to effectively implement the outdoors as a part of their curriculum (Dyment, 2005; Wade, 1996). Therefore, teachers are reluctant to provide children with opportunities to learn outdoors because they lack confidence in their ability to help children learn outside the classroom. Moreover, a common misconception among teachers is that the outdoors provides teachers

an opportunity to “take a break” and engage only in supervision as it relates to safety (McClintic & Petty, 2015, p. 27). Children miss out on the full potential of the outdoor environment when teachers choose not to engage and support children’s development (McClintic & Petty, 2015). Likewise, outdoors, teachers are less likely to assess children and document development compared to when they are inside the classroom, suggesting that teachers also lack an understanding in how to approach assessment outdoors and view outdoor experiences as meaningful to children’s development (McClintic & Petty, 2015)

In sum, despite a significant amount of research documenting how children’s development is supported through outdoor experiences, teachers lack knowledge in how to support children’s development outdoors. Though teachers view outdoor play as important, they are confused about their role outdoors and consider the indoor classroom to be children’s primary learning environment (McClintic & Petty, 2015). This suggests the need for teachers to receive additional training regarding the importance of outdoor learning environments and how to effectively implement an outdoor curriculum.

Summary and Purpose of Project

Research indicates that increasing children’s time spent outdoors benefits their social/emotional, physical, and cognitive development, enables stress management, and promotes the development of an environmental ethic in children. Teachers play an integral role in supporting children’s development of a relationship with the outdoors and are responsible for providing children with

outdoor experiences that might otherwise be missing from their lives. Rather than view the outdoors as a place devoid of learning, teachers need to be encouraged and educated in their use of the outdoors as a second learning environment.

The purpose of this project is to train early childhood teachers about the benefits of nature for children and introduce ways to implement an outdoor classroom by using an approach that encourages teacher discussion, reflection, and development. The three main results expected from these trainings include: 1) participants will be more knowledgeable about the benefits of nature to children's development, 2) participants will be more likely to extend their teacher role outdoors, including that of facilitator and assessor, and 3) participants will feel confident in their ability to implement an outdoor curriculum.

CHAPTER TWO

METHODS

Overview

The purpose of this project was to increase early childhood teachers' knowledge about the benefits of children's experiences with nature and how to implement an outdoor classroom of their own. Early childhood teachers attended four training sessions entitled, "Bringing the Wonder of Nature Back to Early Childhood Classrooms." The trainings focused on seven topics related to the outdoor classroom, including an introduction to the outdoor classroom, the benefits of nature and the consequences of its removal, developmental theories related to nature, outdoor curriculum and activities, teacher engagement, assessment of children outdoors, and implementation of the outdoor classroom (Table 1). Each session was two hours long. At the beginning of the trainings, participants completed a pre-training assessment and provided background information about themselves. After all sessions were completed, participants filled out a post-training assessment as well as a brief post-training survey to determine the effectiveness of the training on increasing the quality and quantity of children's outdoor experiences.

Table 1. Training Schedule

Training	Topics
Session #1 (2 hours)	1. Pretest/Demographics 2. Benefits of Nature and the Consequences of Its Removal 3. Introduction to the Outdoor Classroom
Session #2 (2 hours)	1. Developmental Theories 2. Outdoor Curriculum and Activities
Session #3 (2 hours)	1. Teacher Engagement 2. Assessment Outdoors
Session #4 (2 hours)	1. Implementing an Outdoor Classroom 2. Posttest/Post-training Evaluation

Participants

A total of six teachers from a Kindercare center and elementary charter school in southern California signed up to participate in the trainings. Three teachers dropped out before the session began and one teacher (T 3) dropped out halfway through the trainings, leaving a total of two teachers to complete the trainings. Their ages ranged from 25-60 years (m = 42.5); one was Hispanic and the other was Caucasian. Both teachers had their bachelor's degree with one indicating some graduate coursework but no graduate degree. Teachers reported having taught infants through school-age children. Their experience as teachers ranged from 3 months to 25 years (see Table 2 for teachers' background information).

Table 2. Teachers' Background Information

	Teacher 1	Teacher 2
Educational Background	BA; some graduate studies	BA
Months/years experience	25 years	3 months
Ages of children worked with	Transitional Kindergarten Kindergarten School-age	0-1 years 1-2 years 4-5 years
Ages of children currently working with	Transitional Kindergarten Kindergarten School-age	1-2 years

Measures

Pre-Training Assessment

Teachers were given a 17-item pre-training assessment developed by the researcher to determine teachers' perception of their knowledge about the benefits of an outdoor classroom to children's development, the level of confidence in their ability to utilize and maintain an outdoor curriculum, and their current outdoor teaching behaviors (Appendix A). Items were responded to on a 7-point Likert scale.

Post-Training Assessment

The post-training assessment was a slightly modified version of the pre-training assessment (Appendix B). Questions related to the current outdoor

behaviors of teachers were reworded to reflect the difference the training might have made to the teachers' behaviors.

Class Evaluation

Teachers were also given a post-training evaluation to obtain their thoughts about the effectiveness of the intervention (Appendix C). Teachers were asked about the usefulness of the trainings, what they enjoyed, the most important thing they learned, anything they thought could be added or changed to improve the training's effectiveness, to what extent they plan to use the information obtained from these trainings in their own classroom or center, whether they have implemented any changes to their classroom/center as a result of the trainings and what those changes were, whether they have noticed any differences in the children as a result of the changes, and whether they felt equipped to provide others with information about nature's benefits to children and advocate for children to spend more time outdoors.

Demographic Information

Teachers were also asked to provide information regarding their age, gender, ethnicity, educational background, teaching experience, and classroom characteristics at the outset of the trainings (Appendix D).

Development of Project Materials

Seven topics were covered during the four sessions of this training. The topics included: Introduction to the Outdoor Classroom, Benefits of Nature and the Consequences of Its Removal, Developmental Theories, Outdoor Curriculum

and Activities, Teacher Engagement, and Assessment Outdoors, and Implementing an Outdoor Classroom. Sessions also included reflection questions and activities completed as a group to ensure participants were engaged and able to actively apply the material.

Benefits of Nature and the Consequences of its Removal (Session #1)

Researchers have linked time spent in nature with positive benefits associated with children's development, including cognitive, social/emotional, and physical development, as well as decreased stress and the development of an environmental ethic. Teachers were therefore introduced to a summary of benefits related to each of these aspects of development (see Appendix E for session PowerPoints and handouts). Additionally, a major component of the Outdoor Classroom includes understanding why contact with nature has decreased for children and the ramifications of this phenomenon. Utilizing Louv's (2008) book, *Last Child in the Woods*, teachers were presented with information regarding the health and physiological consequences that coincide with children's decreased connection with nature, which Louv refers to as "nature-deficit disorder."

Introduction to the Outdoor Classroom (Session #1)

Teachers were introduced to the outdoor classroom, including the theory behind utilizing outdoor classrooms, what an outdoor classroom is, and the characteristics of an outdoor classroom (see Appendix F for session PowerPoints and handouts). Teachers also learned the benefits of the outdoor classroom for

both children and teachers, the importance of indoor/outdoor flow, and what experience teachers need to successfully implement an outdoor classroom. A clear distinction was made between viewing time spent outdoors as “recess” as opposed to an “outdoor classroom.” Teachers also reflected on potential challenges they may face in implementing an outdoor classroom.

Developmental Theories (Session #2)

In order to implement an outdoor classroom effectively, teachers need to understand developmental theory and the theorists who have formed the foundation for its implementation (Nelson, 2012). Therefore, teachers were introduced to key theories developed by John Dewey, Maria Montessori, Friedrich Froebel, Erik Erikson, and Howard Gardner as they relate to child development and time spent in nature (see Appendix G for session powerpoints and handouts). The current implications of Edward O. Wilson’s biophilia hypothesis and the current trend of “biophobia” developing among today’s youth was also discussed. This information gave teachers the foundation from which outdoor curriculum and activities could be considered.

Outdoor Curriculum and Activities (Session #2)

The outdoor classroom should utilize a curriculum that is emergent, child-led, and flexible (Copple & Bredekamp, 2009; Nelson, 2012; Wirth & Rosenow, 2012). Copple and Bredekamp (2009) refer to this as a “comprehensive, effective curriculum” and emphasize that children’s development and learning need to be interrelated rather than viewed as separate

entities (p. 20). They state that an effective curriculum is one that has clearly defined goals and provides the framework for planning the various learning experiences children will be provided to reach such goals (Copple & Bredekamp, 2009). During this training, participants considered their own curriculum framework and how such goals could be met outdoors through learning experiences that connect children's learning throughout multiple areas of development (see Appendix H for session PowerPoints and handouts).

Teachers who wish to utilize a curriculum that is both comprehensive and effective have to remain flexible in their teaching methods. This requires teachers to utilize a wide range of teaching strategies (Copple & Bredekamp, 2009). Effective teachers are able to switch between various teaching strategies depending on what goals they have in mind for the children or the particular situation they find themselves in. Teachers were therefore introduced to a variety of teaching strategies, including scaffolding, a strategy that allows teachers to provide children with experiences that are both challenging and achievable. Scaffolding is a teacher's ability to provide children with challenging experiences while maintaining the appropriate amount of support for the child to succeed (Copple & Bredekamp, 2009). This requires teachers to be intentional in their efforts to provide children with optimal learning experiences that both meet children at their developmental level while also encouraging growth and expansion into new areas of development (Copple & Bredekamp, 2009).

Teacher Engagement (Session #3)

Teacher engagement and support of children's learning is imperative to child development. According to Copple and Bredekamp (2009), children's development is optimized when they have secure and consistent relationships with adults who are responsive to them. Therefore, teacher engagement should not stop once children are outdoors. During this training, teachers learned how to stay engaged with children outdoors, what teacher engagement looks like, and how to maintain support of children's learning without interfering with children's own plans and goals for their learning experiences through the use of "sportscasting" (see Appendix I for session PowerPoints and handouts). "Sportscasting," or selective intervention, refers to teachers' ability to know when to step in and when to step back while maintaining engagement with children, and is based on the ideas of Magda Gerber who felt that teachers should allow children the opportunity to resolve child-child conflicts on their own while maintaining support for the children by verbalizing a play by play of children's actions to provide children with an understanding of what is happening. This means that, during instances of child-child conflicts, teachers observe and state the facts about what is happening to children without solving the problem for the children, thereby allowing children the opportunity to problem solve on their own while knowing they are supported (Janet Lansbury, 2013). Though selective intervention and sportscasting are typically thought of in terms of child-child conflicts, teachers can also apply it to instances where children are actively

engaged in an activity but teachers still want to support their learning. This training helped teachers learn how to utilize selective intervention while remaining supportive of children's development.

Assessment Outdoors (Session #3)

Time outdoors offers teachers the opportunity to carefully observe and document children's development and interests in a way that does not take place indoors. Assessment is important to children's development because it considers the ways in which children have progressed towards desired goals, and it helps teachers determine where additional support is still needed (Copple & Bredekamp, 2009). This information allows teachers to guide their curriculum, both through knowledge of learning experiences needed by both individual children and the group as a whole and by noticing children's interests. When teachers take careful notes about children's interests and experiences, they are able to plan a curriculum and adapt the environment to meet the children's needs while maintaining interest. Teachers were therefore introduced to various assessment methods that can take place outdoors, including anecdotal records, nature notes, learning records, documentation panels, checklists, and time sampling (see Appendix J for session PowerPoints and handouts). Teachers were encouraged to reflect on their own documentation of children and how such documentation can help them enhance children's learning experiences to further extend their learning.

Implementing an Outdoor Classroom (Session #4)

The design and implementation of an Outdoor Classroom is important for children to receive the benefits of nature discussed. An Outdoor Classroom is supportive of the idea that children learn best through holistic learning, i.e., learning that considers whole-child development and multiple developmental domains at once (Nelson, 2012; Wirth & Rosenow, 2012). If children are to benefit from such a space, important consideration must be given to what elements are included. Wirth and Rosenow (2012) posit that two misconceptions often belie outdoor development: first, that educators believe adding a nature-filled outdoor classroom to their program will be too costly or time-consuming and thus should not be attempted; second, changes are made so quickly and haphazardly that little thought is given to the children and the environment, resulting in little or insignificant changes. These misconceptions are of disservice to both teachers and children, as the implementation of a nature-filled outdoor classroom does not need to be costly or replace an existing playground. Also, when the design is thoughtfully considered, it benefits the curriculum and the children's development (Wirth & Rosenow, 2012). Therefore, teachers were introduced to ways to avoid haphazard decision-making (see Appendix K for session PowerPoints and handouts).

To avoid haphazard decision-making or becoming preoccupied with the high costs of an outdoor redesign, programs looking to become more nature-focused should divide their goals into three categories: immediate,

short-term, and long-term (Nelson, 2012). Immediate goals should include small steps that require little planning or cost to the program but which create momentum for change through visible successes. Such goals might include simply increasing the amount of time children spend outdoors or allowing children to engage in an activity typically done indoors (e.g., reading) outdoors. Conversely, short-term goals typically require planning, may incur some costs, and take place over several months. This may include opportunities for professional growth for teachers such as through workshops or conferences on the subject, adding raised planter boxes to the existing playground, or considering ways to build community through the outdoors by involving parents and families in the redesign process and explaining the value of outdoor activities (Nelson, 2012; Wirth & Rosenow, 2012). Lastly, long-term goals would be those that comprehensively consider the outdoor environment and may require large amounts of money not immediately available. This may include a complete renovation of the yard that is thoughtfully considered and carried out over years through fundraising and/or further staff development (Nelson, 2012). Teachers were therefore introduced to these three phases and given information to support their program in each of the three phases, including how to get stakeholders involved (i.e., parents, families, teachers, etc.) and potential barriers to the outdoor classroom.

This particular session was intended to be interactive. Teachers utilized the information covered throughout the sessions to consider the state of their

current environments, develop immediate goals for their own classroom/center, and establish a rough sketch of a nature action plan that considers short-term and long-term goals. At the culmination of this session, it was intended that teachers should feel comfortable planning for their own outdoor classroom and know what steps to take to make their goals into realities.

Procedure

Participants were recruited from a local Kindercare and charter school via a flyer (Appendix L) and in-person invitation to join the group. The in-person invitation included basic information about when and where the sessions would take place, while the flyer included more detailed information about what topics would be covered across the four-week sessions. Though many teachers were hesitant to sign up because they were not required to attend any trainings for their position, six teachers expressed interest and gave their name and number to the researcher to sign up for the trainings. This information was used to call the participants a few days before the first session to remind them that the trainings would be starting. Additionally, the participants who signed up for the trainings but did not show up to the first session were called again to offer a make-up session so they could still complete the trainings but all three declined.

At the beginning of the first session teachers were given a statement of informed consent (Appendix M) that the researcher read to the teachers before signing. Once the consent forms were collected, each of the teachers filled out a

pre-training assessment (Appendix A) as well as their demographic information (Appendix D).

The researcher arrived early to each of the four sessions to set up the classroom and lay out the necessary materials for that day's session (e.g., powerpoints, handouts, etc.) and set out a small dinner and cookies for the participants.

At the end of the last session, the researcher passed out a post-training assessment (Appendix B) and post-training evaluation (see Appendix C) for the participants to complete. After these were collected the teachers were debriefed about the purpose of the trainings and given the researchers contact information in case they were interested in the results or needed help in the future with their outdoor classrooms.

CHAPTER THREE

RESULTS

Pre- and Post-Training Assessment

To determine whether the training had the expected effect of increasing teachers' knowledge, behaviors, and confidence surrounding outdoor classrooms, pretest means were compared to post-test means for the training assessment scale. Results are shown in Table 3 and show that teachers' knowledge about outdoor classrooms increased for all six items.

Table 3. Pre- and Post-Test Means for Teachers' Perceived Knowledge About Outdoor Classrooms (1 = Not At All Knowledgeable; 7 = Very Knowledgeable).

	Pre-test (N = 2)	Post-test (N = 2)
Understanding how an outdoor classroom supports whole child development.	4	6.5
Understanding how an outdoor classroom supports children's social/emotional development.	4	6.5
Understanding how an outdoor classroom improves later school achievement.	4	6.5
Understanding the consequences of children not spending enough time outdoors.	5	6.5
Understanding how children's development is facilitated outdoors.	4	6.5
How developmental theory relates to children's time in nature.	4.5	6.5
Average:	4.25	6.5

Next, to assess teachers' likelihood of engaging in positive teaching behaviors outdoors, pre-test versus post-test scores showed that post-test scores were again higher than pretest scores, suggesting the teachers felt they were more likely to engage in positive teaching behaviors outside following the trainings (Table 4).

Table 4. Pre- and Post-Test Means for Teachers' Likelihood of Engaging in Positive Teaching Behaviors Outdoors (1 = Not At All Likely; 7 = Very Likely).

	Pre-test (N = 2)	Post-test (N = 2)
Directly engaged with children when playing outdoors.	4.5	7
Assess children outdoors.	3.5	6.5
Enjoy time spent outdoors with children.	5.5	7
Ask children open-ended questions.	5.5	7
Engage in scaffolding outdoors.	5	6.5
Average:	4.8	6.8

Finally, teachers' level of confidence regarding their ability to implement an outdoor classroom also increased as a result of the trainings (Table 5).

Table 5. Pre- and Post-Test Means for Teachers' Level of Confidence Regarding an Outdoor Classroom (1 = Not At All Confident; 7 = Very Confident)

	Pre-test (N = 2)	Post-test (N = 2)
Ability to implement an outdoor classroom.	4	6.5
Ability to meet early learning standards consistently outdoors.	4	6.5
Ability to facilitate children's development outdoors.	4.5	6.5
Ability to provide children with meaningful experiences outdoors.	4.5	6.5
Understanding how children's development is facilitated outdoors.	4	6.5
Ability to provide children with activities outside that are usually done inside.	4.5	6.5
Average:	4.25	6.5

Post-Training Class Evaluation

The post-training evaluation survey showed, in general, that teachers found the trainings to be a positive experience. Many of their comments indicated they were actively thinking about the information presented and attempting to implement changes in their own classrooms.

The first question asked teachers to rate how useful they found the training on a 7-point Likert scale. The mean response for this item (1 = "not at all"; 7 = "very useful") was 7.

The second question asked what the teachers enjoyed most about the trainings. The teachers mentioned that they enjoyed reflecting on how to change

or improve their current classrooms by utilizing the new information and collaborating with others during the training sessions (Table 6).

Table 6. What Did You Enjoy Most About These Trainings? (N = 2)

T 1	"I liked thinking about changing and improving my current environment. I liked collaborating with others in class." (T1, personal communication, October 2015)
T 2	"Learning how to implement an outdoor classroom and learning how you can improve on your own classroom." (T2, personal communication, October 2015)

The third question asked teachers what they felt was the most important thing they learned during the trainings. Teachers mentioned looking at the outdoors with a new perspective, incorporating the outdoors with their class, and remembering to take notes to assess children's learning.

Table 7. What Was the Most Important Thing You Learned from These Trainings? (N = 2)

T 1	"I liked the reminders about anecdotal record keeping. I liked thinking about how to incorporate the outdoors into my class." (T1, personal communication, October 2015)
T 2	"Looking at the outdoor environment in a different perspective." (T2, personal communication, October 2015)

The fourth question asked teachers what they felt could be added or changed to improve these trainings. Only one teacher responded to this

question, and she mentioned that the addition of pictures showing an outdoor classroom in action would be beneficial.

The fifth question asked teachers to evaluate the extent to which they planned to use the information from the trainings in their own classroom on a 7-point Likert scale. Both teachers responded to this item with “7.”

The sixth question asked teachers if they had already implemented changes in their own classroom as a result of the trainings, what changes were made, and whether they had noticed any differences in the children since making such changes. Both teachers mentioned moving, or thinking about moving, certain learning centers outside. One teacher responded that she noticed children were able to sit longer and eat more at snack time and appear to explore more outdoors as a result of this change:

Table 8: Have You Already Implemented Changes at Your Center or in Your Own Classroom as a Result of These Trainings? If So, What Changes Have You Made? Have You Noticed Any Differences in the Children Since Making These Changes?

T 1	“I have been adding more sensory centers in my classroom and now I am thinking about moving these more active centers outside. I appreciated the planning sheets for immediate, short and long term goals.” (T1, personal communication, October 2015)
T 2	“Bringing centers outside. During snack time the children are able to sit a little bit longer and eat more snack, as opposed to getting up from their chair. Sensory time outside has made the children explore more, and ‘feel free’ to explore.” (T2, personal communication, October 2015)

The seventh question asked teachers whether or not they felt better equipped to explain the benefits of nature to others and advocate for children to spend more time outdoors. Both teachers responded “yes” to this item.

Implementation of Trainings

There were two main issues surrounding the implementation of the training: the small number of participants and technical difficulties with the delivery of information.

First, participant recruitment and retention was a major obstacle. Though the directors at the centers who were initially approached (i.e., KinderCare and Springs Charter School) were excited about the topic and the potential changes for their centers, most of the center teachers were unwilling to attend. During recruitment, many teachers expressed interest in the subject matter but few were willing to sign up because the trainings were outside of their scheduled hours and they would not be paid to participate. Additionally, neither center required additional trainings or continued professional development as a part of their job description. Though six teachers ultimately signed up to participate prior to the start of the trainings, only three teachers attended the first session. The three missing teachers were offered a make-up session so that they would still be able to complete the trainings but all three declined the offer. Of the three teachers who completed the first session, one more dropped out after session two because she was finding it hard to balance school, work, and the evening trainings. Ultimately, only two teachers completed all four sessions, and both

cited a lack of support at each of their schools to actually implement changes. Both teachers stated issues such as center policies, licensing, staffing issues, and a lack of funding as reasons more changes were not made as a result of the trainings and a potential reason more teachers were unwilling to participate (therefore, the trainings did not have as big of an impact on San Bernardino county schools as was hoped).

It was originally planned that participants would be current teachers recruited from California State University, San Bernardino's (CSUSB'S) Children's Center and Infant/Toddler Lab School; however, based on the advice of one of the project's committee members, participants were recruited from two schools within San Bernardino county. It was decided that teachers at CSUSB already had some familiarity with outdoor education for young children, and that recruiting participants from outside the campus community could potentially have a more positive impact since these centers may have been less likely to have heard of outdoor education.

Second, there were minor technical difficulties with the delivery of information during the trainings. Prior to the start of the trainings, the researcher had discussed with the assistant director of KinderCare about how to display the PowerPoints as the trainings were to take place in their school-age classroom. It was decided that a laptop could be hooked up to a television already in the room so that teachers would have an easier time following along with the information. As the classrooms were in session during the day, the researcher was unable to

test the connection beforehand. Because the television set in the room was older, the researcher was unable to establish a connection from a laptop to the television. Due to the limited number of teachers who participated, this problem was counteracted by displaying the PowerPoint slideshow on a laptop to serve as a guide for what slide the group was currently on and providing everyone with a printed copy of the PowerPoints.

CHAPTER FOUR

DISCUSSION

The purpose of this project was to educate early childhood teachers about the benefits of an outdoor classroom and provide them with teaching strategies and information to enable them to incorporate the outdoors into their everyday curriculum. These trainings were developed in response to the growing nature movement across preschools in the United States and research suggesting that the movement's slow acceleration is largely due to a lack of formally trained teachers who can successfully implement outdoor classrooms (Bailie, 2016a; Hoffman, 1969; Wade, 1996). Overall, the few participants who attended the trainings indicated that their knowledge about nature's benefits to children increased, that they were more likely to engage in positive teaching behaviors and the assessment of children outdoors, and that they felt more confident in their ability to successfully implement outdoor activities and curriculum as a result of the trainings.

Pre- and Post-Training Assessment

There were three main results expected from this training. First, it was expected that participants would be more knowledgeable about the benefits of nature to children's development. Results indicated that the teachers' knowledge about how nature benefits children's development increased across all responses for the two individuals who attended all of the trainings. Three of the

four trainings utilized a PowerPoint presentation and handouts that contained specific, research-based information on how children's development is supported through contact with nature. Additionally, every training session utilized group discussions and opportunities for the teachers to reflect on children's development outdoors. Interestingly, when comparing pre- and post-test scores for individual items, it appeared that prior to the trainings teachers felt most knowledgeable about the consequences of children not spending enough time outdoors but less knowledgeable about how outdoor classrooms contribute to children's overall development and later school achievement. This suggests that teachers are aware of children's disconnection from nature but are unaware of how to communicate why it is important and how it benefits their development. Overall, the current training addressed both the benefits of children's contact with nature and the consequences of its removal; additionally, all of the information presented was backed up by current research which likely allowed the teachers to accept the information more readily. Though post-test scores revealed that teachers still felt more knowledgeable about the consequences of nature's removal than they had at the beginning of the training, the training appeared to have a more significant impact on areas related to children's development. Given that more emphasis was placed on the benefits of nature to children's development, this result is not surprising. While the first session specifically addressed both the benefits of nature and the consequences of nature's removal, each of the following three sessions discussed how children's development

benefits from contact with nature based on the content of the sessions. It is possible that the further investigation of topics such as outdoor curriculum and teacher engagement may have contributed to the additional increase in teachers' knowledge about the benefits of nature to children's development because the teachers had more exposure to beneficial information than the consequences of nature's removal.

Second, it was expected that participants would be more likely to engage in positive teaching behaviors (e.g., directly engaged with children, asking open-ended questions, scaffolding, etc.) and the assessment of children outdoors. Results indicated that, as a result of the trainings, teachers felt more likely to remain directly engaged with children and actively try to facilitate and assess their development outdoors. Though only one session was dedicated specifically to teacher engagement and outdoor assessment, every session emphasized the outdoors as an extension of the classroom, allowing teachers to extend their role of facilitator beyond their current classroom. When examining pre- and post-training scores for individual items, it appeared that the most significant impact was on increasing teachers' likelihood of assessing children outdoors. Though McClintic and Petty (2015) suggest that teachers are less likely to document and assess children's development outdoors because teachers are confused about what role they play outside the traditional classroom, this result is consistent with Nelson's (2012) statement that teachers need to view the outdoors as an extension of the classroom in order for maximum development to

take place. The initial training sessions introduced teachers to the outdoor classroom and discussed outdoor curriculum and activities, which may have increased the likelihood that teachers would view the outdoors as an extension of the classroom and be receptive to the idea of assessing children outdoors. Additionally, six different assessment methods were discussed during this child assessment session, increasing the odds that one of the methods would resonate with teachers and impact the likelihood of utilizing the method in the future. Though the teachers were not unfamiliar with assessing children, one teacher mentioned that this session impacted her the most because it was a great refresher of information she had learned previously but was not currently employing in her classroom. Another teacher mentioned that she was not required by her center to assess the children in her program, but she loved the idea of documenting what the children were learning during outdoor activities and sharing the information with parents to counteract their assumption that children are not learning through play. Therefore, it is also possible that the increase in the likelihood of teachers assessing children outdoors was due to teachers rethinking their current assessment methods and being inspired to utilize methods not currently in use.

Third, it was expected that participants would feel more confident in their ability to implement an outdoor curriculum. Results indicated that teachers' confidence increased across all responses as a result of the trainings. This is significant because previous studies have suggested that a major barrier to

children's outdoor learning is that teachers lack confidence in their ability to successfully implement an outdoor classroom (Dyment, 2005; Hoffman, 1969). Previous studies have found that even schools with green schoolyards were not utilizing their outdoor program effectively because teachers lacked confidence in their ability to use the environment effectively (Dyment, 2005). During session two, teachers were encouraged to reflect on their current curriculum and consider how children's experiences with nature increase development; concepts such as gardening, loose parts, physical activity, and dramatic play were discussed and connected to current learning standards. Lastly, as a group, the teachers discussed how to support children's development outdoors and considered what they wanted to accomplish to further the quality of children's engagement with the environment and extend children's current interests through activities and lesson planning. Given that each of the teachers felt significantly more confident in their ability to implement and facilitate an outdoor classroom as a result of these trainings suggests that teachers need training in how to utilize outdoor environments before children's development can be enhanced through outdoor learning.

Post-Training Evaluation Survey

At the culmination of the four training sessions, teachers were asked seven post-training evaluation questions. Overall, the teachers found the trainings to be very useful and gave positive feedback regarding the training's effectiveness.

Both teachers indicated that one of the things they enjoyed most about the trainings was thinking about how to improve and implement changes in their own classrooms. Though both of the teachers held bachelor's degrees, they mentioned during the trainings that outdoor education was not something covered during their schooling. At the center of the move towards nature preschools and utilization of outdoor classrooms is the need for qualified, enthusiastic teachers who can inspire children with the same love for nature-based learning. Until recently, no higher education programs combined early childhood education and environmental education into one degree in the United States, despite research suggesting that preservice teachers view outdoor settings as the most conducive for meeting developmental goals with children (Bailie, 2016a; Ernst & Tornabene, 2012). Currently, there is only one program in New England that offers a certificate program in Nature-based Early Childhood Education (Bailie, 2016a, p. 216). These trainings offer insight into the need for more outdoor education to be part of the early childhood curriculum.

Both teachers indicated that they would definitely be using the information from the trainings in their own classrooms and that they had already begun making changes as a result of the trainings. During the session on curriculum, it was suggested that anything done indoors could also be done outdoors. Both teachers specified that they had moved traditionally "indoor" activities outside, and one teacher mentioned that she had already noticed a difference in the children's ability to sit longer at snack time as a result of the change. This is

consistent with Taylor, Kuo, and Sullivan's (2001) research which proposed that nature restores children's capacity for increased attention and ability to focus on tasks, and Honig's (2015) suggestion that children who have trouble controlling their impulses might benefit from spending time in natural spaces. Another teacher indicated that the immediate, short-term, and long-term goal-planning worksheets were particularly helpful and she had been using them to plan for more changes to her classroom.

Lastly, both teachers indicated that they felt better equipped to explain the benefits of nature for children and advocate for additional time for children to spend outdoors. Aside from needing well-qualified teachers to effectively implement an outdoor classroom, teachers need to be well-versed in how nature helps children develop as parents in the United States are preoccupied with children developing the appropriate academic skills rather than developing their social, emotional, motor, and cognitive abilities through play (Sobel, 2016). When teachers are able to effectively communicate their vision for how children learn and provide evidence for development through documentation, it encourages families to support outdoor play at home and helps parents appreciate children's ability to learn through outdoor experiences (Nelson, 2012).

Recruitment and Retention of Participants

There were two main issues related to the recruitment and retention of participants: participants were not required to attend professional development

trainings at their center and there was no monetary incentive for attending or completing the trainings.

First, neither of the centers that participated in the trainings required their teachers to attend trainings or encouraged the professional development of their teachers outside of their regular staff meetings. Past research suggests that well-educated and knowledgeable teachers provide the most positive outcomes for children; this was documented in a joint position statement released by NAEYC and the National Association of Early Childhood Specialists in State Departments of Education (NAECS/SDE) in November 2002. Such a statement implies that the more professional development and education teachers are required to have, the more children's development will be supported. However, neither of the centers (one of which was accredited by NAEYC) encouraged teachers to regularly further their knowledge by requiring it as a part of their job description.

Second, the trainings were directed toward early childhood teachers, a field that Stipek (2006) notes pays less, on average, than what the typical janitor is paid. For early childhood teachers to desire more knowledge and invest more time in their education outside of the workday, they must first be compensated fairly for their efforts inside of the classroom. As this training only provided participants with a small incentive (i.e., a gardening starter kit for their classroom and food to eat during each of the training sessions), the lack of any monetary incentive for the participants' time combined with already too-low wages led to

problems with participant recruitment and retention. It was difficult to find teachers who were willing and able to participate in the trainings and, of the six teachers who originally signed up to complete the trainings, four participants dropped out despite initial interest and excitement about the topic. Future trainings might consider combining sessions in order to retain teachers for a shorter amount of time (i.e., two sessions instead of four) or combining all sessions into one, all-day training rather than weekly sessions, as many teachers work Monday through Friday. Larger rewards or incentives for participation should also be considered to help entice more teachers to attend trainings.

Resistance to Implementation

Given that each of the participating teachers had the support of their directors to become more involved with outdoor learning, the resistance to implementing any changes at each of the centers was unexpected. When it came time to make changes (even small ones) to each of their classrooms, both teachers stated that they felt constrained by the rules and regulations currently in place at their centers. This is consistent with previous research which suggests that the development of outdoor activities and outdoor classrooms is often limited by administrators' worries about liability suits, potential dangers, and costs associated with changing the current program (Hoffman, 1969; Nelson, 2012). For instance, one of the participating teachers shared that she was excited to take the children out in the rain because of the research discussed during one of the training sessions. However, when she asked her director if she could take the

children out in the rain, she was told no because the puddles could potentially pose a hazard to the children that could result in a licensing citation. This suggests that without a nature-based knowledge background of their own, directors and administrators are unwilling to implement changes to their policies because of unwarranted fears they are unable to defend.

Additionally, it is unrealistic to expect a single teacher to be the driving force of change across an entire center and it often takes a team of teachers to act as advocates in gaining administrative support (Kenney, Militana, & Donohue, 2003; Nelson, 2012). Though the current training sought to include multiple teachers from two sites, it was unsuccessful in recruiting and retaining enough teachers to do so, possibly due to the rules and regulations currently in place at each of the centers. While previous outdoor training programs have successfully gained momentum by utilizing teacher-driven programs (i.e., programs not required by administration), such programs have benefited from having multiple participants from the same site advocating for change (Kenney, Militana, & Donohue, 2003). Additionally, although Nelson (2012) lists teachers as the most important factor for implementing successful outdoor classrooms, he notes that teachers cannot be successful without their administration adapting new policies that include outdoor classrooms and a sufficient number of staff at the center being willing to implement it. Though participating teachers had the informal support of their directors, future trainings might consider including center directors and administrators to ensure that teachers are supported in their

implementation of an outdoor classroom and nature play for children. Given that teachers, not administrators, play the largest role in motivating and implementing change, future trainings should consider a delicate balance between gaining administrative support while still allowing the changes to be teacher-driven (Kenney, Militana, & Donohue, 2003; Nelson, 2012). This would require a restructuring of the current training program and could potentially be accomplished by creating an introduction session for directors and administrators prior to the start of the trainings, and inviting directors and administrators to take part in the fourth session during which time teachers planned and set goals for their outdoor programs.

Limitations and Future Trainings

Though the present training benefited teachers, it had some limitations that offer insight on how to best implement future trainings. First, the significant limitation of this project was the number of teachers who participated in the trainings and retention of participants. This low number of participants obviously makes the findings of the pre-post assessments tenuous and suggests changes that need to be made for future trainings. Because of a lack of an incentive, teachers seemed unwilling to attend the trainings; additionally, directors were unwilling to pay their teachers to attend additional trainings that would benefit their job and performance as a teacher. This suggests that teachers may be unwilling to attend future trainings unless they are compensated for their efforts. Alternatively, future trainings could consider eliminating the outdoor curriculum

and activities session and instead include a visit to each of the participants' classrooms. During the visit, the trainer could lead a simple activity outdoors with the children (e.g., a water activity with funnels and tubes) and allow the participating teacher to see an activity first hand. A packet with future activities and curriculum ideas could be provided at the end of the session. Though this may require approval from the schools' administrators, previous outdoor training programs have found sample lesson demonstrations to be effective strategies for teacher retention (Kenney, Militana, & Donohue, 2003).

Teachers also felt the sessions could be improved by providing pictures of children engaged in activities outdoors. Future trainings should consider adding videos of children engaged in play outdoors as well as pictures to provide a visual aid of children's learning in addition to the current training materials. This could be done by visiting centers that already utilize outdoor classrooms and videotaping/photographing children engaging with materials after receiving parent permission to use their child's image. This would make the training materials more relevant as participants would see the concepts brought to life and used within a real world setting (e.g., a video of preschoolers gardening would enable discussion about the concepts the children are utilizing from the handouts rather than simply discussing what children could potentially learn).

Conclusion

The purpose of this project was to educate current early childhood teachers about the benefits of nature for children, and educate them in how to

develop and implement an effective outdoor curriculum. The goal was to create a training that accomplished these goals because at the center of the move towards nature preschools and utilization of outdoor classrooms is the need for qualified, enthusiastic teachers who can inspire children with the same love for nature-based learning (Bailie, 2016b). This training did show improvements in teachers' knowledge about children's outdoor learning and their plans to develop and implement their own outdoor curriculum. The trainings inspired teachers to begin implementing outdoor activities as a part of their curriculum and provided many examples of outdoor activities for teachers to use. Both teachers indicated during the training sessions that they had already made immediate changes to their classrooms (such as allowing children to participate in sensory activities outdoors), and the further development of such activities was supported by allowing time during each training session for discussion, reflection, and collaboration between the teachers and the facilitator. Lastly, the need for such trainings is becoming more imperative as nature-based programs continue to flourish in the United States (Bailie, 2016b). Historically, nature-based programs have employed teachers who were rich in environmental knowledge rather than early childhood education and developmentally-appropriate practice (Bailie, 2016b). As nature programs become more prominent, the need for teachers who are educated in early childhood development, developmentally-appropriate practice, and outdoor education is crucial. This project established trainings that combined knowledge of child development and nature's benefits for children with

an emergent curriculum framework that could easily be modified depending on the current needs of the children and the program.

APPENDIX A

PRE-TRAINING ASSESSMENT

Pre-training Assessment *code number:* _____

For the following questions, please indicate *how knowledgeable you feel*.

1. How knowledgeable do you feel in understanding how an outdoor classroom supports whole child development?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

2. How knowledgeable do you feel in understanding how an outdoor classroom supports children's social/emotional development?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

3. How knowledgeable do you feel in understanding how an outdoor classroom improves later school achievement?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

4. How knowledgeable do you feel in understanding the consequences of children not spending enough time outdoors?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

5. How knowledgeable do you feel in understanding how children's development is facilitated outdoors?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

6. How knowledgeable do you feel in how developmental theory relates to children's time in nature?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

For the following questions, please indicate *how likely you are* to do the following in your current classroom.

7. How directly engaged are you with children when children are playing outdoors?

Not at all engaged						Very engaged
1	2	3	4	5	6	7

8. How often do you assess children outdoors?

Not at all often						Very often
1	2	3	4	5	6	7

9. How much do you enjoy your time spent outdoors with children?

Not at all						Very much
1	2	3	4	5	6	7

10. How likely are you to ask children open-ended questions outdoors?

Not at all likely						Very likely
1	2	3	4	5	6	7

11. How often do you engage in scaffolding outdoors (e.g., encouraging children to recall past experiences/information when encountering a new situation)?

Not at all						Very much
1	2	3	4	5	6	7

For the following questions, please indicate *your level of confidence* for each statement.

12. How confident do you feel in your ability to implement an outdoor classroom?

Not at all confident						Very confident
1	2	3	4	5	6	7

13. How confident do you feel in your ability to meet early learning standards consistently when children are outdoors?

Not at all confident						Very confident
1	2	3	4	5	6	7

14. How confident do you feel in your ability to facilitate children's development outdoors?

Not at all confident						Very confident
1	2	3	4	5	6	7

15. How confident do you feel in your ability to provide children with meaningful experiences outdoors?

Not at all confident						Very confident
1	2	3	4	5	6	7

16. How confident do you feel in your ability to explain the importance of an outdoor classroom to others?

Not at all confident						Very confident
1	2	3	4	5	6	7

17. How confident do you feel in your ability to provide children with activities outside that are usually done inside?

Not at all confident						Very confident
1	2	3	4	5	6	7

Developed by Heather Claffey

APPENDIX B

POST-TRAINING ASSESSMENT

Post-training Assessment *code number:* _____

For the following questions, please indicate how knowledgeable you feel.

1. How knowledgeable do you feel in understanding how an outdoor classroom supports whole child development?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

2. How knowledgeable do you feel in understanding how an outdoor classroom supports children's social/emotional development?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

3. How knowledgeable do you feel in understanding how an outdoor classroom improves later school achievement?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

4. How knowledgeable do you feel in understanding the consequences of children not spending enough time outdoors?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

5. How knowledgeable do you feel in understanding how children's development is facilitated outdoors?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

6. How knowledgeable do you feel in how developmental theory relates to children's time in nature?

Not at all knowledgeable						Very knowledgeable
1	2	3	4	5	6	7

For the following questions, please indicate how likely you are to do the following in your current classroom.

7. How directly engaged do you feel that you will now be with children when children are playing outdoors?

Not at all engaged						Very engaged
1	2	3	4	5	6	7

8. How often do feel you will now assess children outdoors?

Not at all often						Very often
1	2	3	4	5	6	7

9. Do you feel you will now enjoy your time spent outdoors with children more than before?

Not at all						Very much
1	2	3	4	5	6	7

10. Do you feel more likely to ask children open-ended questions outdoors than before?

Not at all likely						Very likely
1	2	3	4	5	6	7

11. How often do you feel you will now be able to engage in scaffolding outdoors (e.g., encouraging children to recall past experiences/information when encountering a new situation)?

Not at all						Very often
1	2	3	4	5	6	7

For the following questions, please indicate your level of confidence for each statement.

12. How confident do you feel in your ability to implement an outdoor classroom?

Not at all confident						Very confident
1	2	3	4	5	6	7

13. How confident do you feel in your ability to meet early learning standards consistently when children are outdoors?

Not at all confident						Very confident
1	2	3	4	5	6	7

14. How confident do you feel in your ability to facilitate children's development outdoors?

Not at all confident						Very confident
1	2	3	4	5	6	7

15. How confident do you feel in your ability to provide children with meaningful experiences outdoors?

Not at all confident						Very confident
1	2	3	4	5	6	7

16. How confident do you feel in your ability to explain the importance of an outdoor classroom to others?

Not at all confident						Very confident
1	2	3	4	5	6	7

17. How confident do you feel in your ability to provide children with activities outside that are usually done inside?

Not at all confident						Very confident
1	2	3	4	5	6	7

Developed by Heather Claffey

APPENDIX C

POST-TRAINING EVALUATION

Post-Training Survey *code number:* _____

1. How useful did you find these trainings?

Not at all						Very Useful
1	2	3	4	5	6	7

2. What did you enjoy most about these trainings?

3. What was the most important thing you learned from these trainings?

4. Is there anything you feel could be added or changed to improve these trainings?

5. To what extent do you plan to use the information from these trainings in your own, or future, classroom?

Not at all						Definitely yes
1	2	3	4	5	6	7

6. Have you already implemented changes at your center or in your own classroom as a result of these trainings? If so, what changes have you made? Have you noticed any differences in the children since making these changes?

7. Do you feel better equipped to explain the benefits of nature to children and advocate for children to spend additional time outdoors, yes or no?
   ___ Yes

   ___ No

   If not, what would help you feel more confident?

Developed by Heather Claffey

APPENDIX D

DEMOGRAPHIC INFORMATION

Background Information *code number:* _____

1. Age: _____ years
2. Gender: _____ male _____ female
3. Ethnicity: _____ Hispanic _____ African American _____ Asian
   _____ Caucasian _____ Pacific Islander
   _____ Middle Eastern _____ Bi-racial: _____
   Other: _____
4. Educational Background (select one)
   a. High School diploma
   b. Some college
   c. Bachelor's degree
   d. Some graduate studies
   e. Master's degree
   f. Some post-graduate studies
   g. PhD
5. Approximately how many months/years of teaching experience do you have? _____
6. What age(s) of children have you worked with? (circle all that apply)
   a. 0-1 years
   b. 1-2 years
   c. 2-3 years
   d. 3-4 years
   e. 4-5 years
   f. Transitional Kindergarten
   g. Kindergarten
   h. School Age
7. What age(s) of children do you currently work with? (circle all that apply)
   a. 0-1 years
   b. 1-2 years
   c. 2-3 years
   d. 3-4 years
   e. 4-5 years
   f. Transitional Kindergarten
   g. Kindergarten
   h. School Age

Developed by Heather Claffey

APPENDIX E

SESSION ONE: BENEFITS OF NATURE AND THE CONSEQUENCES OF ITS REMOVAL

SESSION ONE

Introduction to the Outdoor Classroom

AND

Benefits of Nature and the Consequences of its Removal

BENEFITS OF NATURE AND THE CONSEQUENCES OF ITS REMOVAL

REFLECTION QUESTION

Think back to your favorite outdoor memory from your childhood. Do you have one? Are children today allowed the same opportunities?

BENEFITS
OF
NATURE

WHOLE-CHILD DEVELOPMENT

- The development of the whole-child is supported
  - Developmental domains are linked rather than viewed as separate
  - Children's differences are lessened or eliminated
    - Teacher's opinions of children change
  - Children's individual circumstances are supported
    - Dual language learners
      - Children are more inclusive outdoors
      - Supports language development
    - Low SES
      - Reduces the effects of poverty
      - Children are more resilient

COGNITIVE DEVELOPMENT AND ATTENTION

- Nature has a restorative effect on attention
  - Two types of attention:
    - Voluntary (directed)
    - Involuntary
  - Too much directed attention = mental fatigue
- Attention restoration theory
  - Nature relies on involuntary attention
  - Time in nature restores the mind
- Improves executive functions

SOCIAL/EMOTIONAL DEVELOPMENT

- Increases autonomy
  - Less adult domination
- Promotes the development of peer relationships
  - More space to move
    - When to enter and exit play situations
    - Decreases frustration and aggressive tendencies
- Play is more physically active
  - Linked to more positive peer relationships in school
  - Allows children to take more social risks
    - Enhanced self-esteem and self-confidence from physical risk-taking
- Play is more egalitarian
  - Highly inclusive
  - More likely to invite children into play situations

CALMS THE NERVOUS SYSTEM

- Promotes the development of self-regulation
- Reduces symptoms of ADHD
- Increases self-discipline
  - Allows children to act less impulsively
  - Helps children learn to delay gratification

PHYSICAL DEVELOPMENT

- Uneven playscapes
  - Better balance and coordination
- Risk-taking leads to a body/brain relationship
  - Instinctual confidence
  - Children have to concentrate on tasks (vs. rote learning)
  - Helps children attune to senses and trust their instincts
- Rough and tumble play

LANGUAGE DEVELOPMENT

- Enhanced primarily through play
  - Outdoors, quality of play is enhanced
    - Complex narratives
    - Representational thought
    - Literacy development
    - Enhanced language
  - Level of involvement
  - Infinite Possibilities

SCHOOL ACHIEVEMENT

- Children who spend time in nature have higher test scores
  - Mastery of science concepts
  - Increased motivation to learn
  - Enhanced problem-solving skills
- Stay in school longer
- Higher than average scholarship awards
- Enhanced classroom behavior

BETTER HEALTH

- Overall, better quality of life
  - Decreases risk of obesity, myopia
- Sick less often
- Reduces asthma symptoms
- Decreases in Vitamin D deficiency
- Mental health

REFLECTION QUESTION

How do you feel when you are outdoors?

CONSEQUENCES OF NATURE'S REMOVAL

DECREASES TO PHYSICAL HEALTH

- Increased myopia
- Childhood obesity
  - Hypertension
  - Type II diabetes
  - Vitamin D deficiencies increase these same risks as well as cardiovascular disease
- "Containerized" kids
  - 56% of time outside is sedentary
- Physical development provides the foundation needed for cognitive development

DECREASED MENTAL HEALTH

- Over-diagnosis of ADHD
  - 4.4 million children diagnosed with ADHD
    - 10-40% overprescribed
    - Boys > Girls
- Increases in childhood depression
  - Urban vs. rural stress

URBANIZATION OF AMERICA

- Decreased access to:
  - Healthy foods
  - Backyards
  - Parks and other green space
  - Schools
- Decreased perception of safety/children cannot play outside
- Increased access and use of electronic media
  - Promotes a sedentary lifestyle
  - Less peer relationships
    - Loneliness, depression
  - Decreases in positive forms of play
- More time in structured activities

SENSE OF PLACE IS LOST

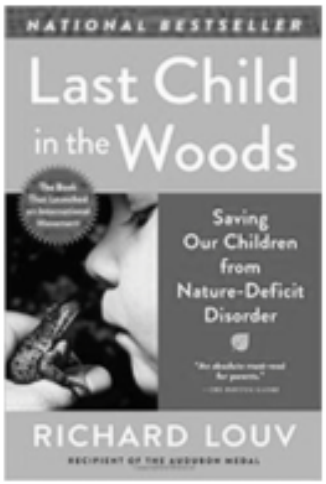
- Diminished appreciation and respect for the natural environment
  - No incentive to "save" it
- Isolation from nature leads to fear and anxiety
- Children are unable to name common plants and living species found in their surrounding environment

PREOCCUPATION WITH ELECTRONIC MEDIA

- Children ages 2-5 average more than 32 hours a week of screen time
- "Traveling media"
  - Tv's in cars
  - Portable video game devices
- Decreases the amount of time children spend in productive forms of play
  - More time in virtual worlds = less time engaging with the real world
- Leads to more attention difficulties

NATURE DEFICIT DISORDER

- Over-diagnoses of ADHD
- First generation of children NOT to outlive their parents
- Reduced or eliminated symptoms from spending time in nature
- Children need time outdoors, not medication



Nature Experiences Help Children with Challenging Behaviors

Improves Executive Function

Executive functions are cognitive abilities that rely on three types of brain functions: working memory, mental flexibility and self-control. These brain functions assist in mental tasks such as planning, focusing attention and remembering instructions.

Executive functions help children…

- Manage frustration
- Set and achieve goals
- Think through the steps needed to solve a particular task
- Concentrate on, and persevere through, a given task
- Overcome challenges through resiliency
- Accept responsibility for, and learn from, mistakes
- Switch gears or change plans when frustrated or disappointed

Nature helps children improve executive function because…

- Children are free to move their bodies however they wish
- They are not constrained by space
- They have control over their choices
- They can engage in what interests them
- They can plan out their experiences
- Personal choice helps improve focus

Helps Children with ADHD

Children with ADHD…

- Have trouble focusing
- Have trouble controlling their impulses
- Are calmer after spending time in nature

Nature helps children with ADHD when they are allowed to…

- Engage in large muscle (gross motor) activities
  - Jumping, running, throwing, taking giant strides, hopping, etc.
- Enhance their self-esteem
  - Teachers should admire the efforts of the child when they are happily engaged
    - Allows the child to feel happier and appreciative of activities that enhance his or her well-being

Helps Children Who are Tense

When children are anxious or tense, their muscles tighten and they move more rigidly. Some children may have been warned not to get dirty and will need more encouragement in learning how to freely move their muscles.

Water, sand, and mud play help children loosen their muscles and are good activities for those who are fearful of playing outdoors.

Extra clothes are also helpful to have available for children who do not like to get dirty. Having an alternative helps children relax and loosen their bodies.

Helps Children Who Need to Let Off Steam

Children may foster pent-up emotions from their experiences at home or in the classroom. Outdoors, children are allowed to leave these emotions behind and channel them in a variety of appropriate ways.

Activities that encourage children to let off steam:

- Pounding on a log
- Kicking balls
- Hurling pinecones
- Letting out strong emotions
    - Allowing children to scream and yell loudly

Nature also encourages a sense of serenity in children as they observe and attend to the world around them. The living creatures children encounter outdoors also awaken feelings of compassion and tenderness in children, counteracting the strong emotions a child might initially bring with them outdoors.

Encourages Children to Play Cooperatively

Children who tend to play alone or disruptively indoors often play more cooperatively outdoors.

Outdoors, children…

- Work together to dig in the sand and dirt
- Build structures with other children
- Develop plans for activities and play experiences
- Gather materials together
- Develop a sense of community

Honig, A. S. (2015). *Experiencing nature with young children: Awakening delight, curiosity, and a sense of stewardship*. Washington, DC: National Association for the Education of Young Children.

APPENDIX F

SESSION ONE: INTRODUCTION TO THE OUTDOOR CLASSROOM

INTRODUCTION TO THE OUTDOOR CLASSROOM

WHY AN OUTDOOR CLASSROOM?

The use of outdoor classrooms, or adding real-world experiences with nature to traditional classrooms, helps negate the effects of "nature-deficit disorder" and allow children to experience the benefits nature provides

WHAT IS AN OUTDOOR CLASSROOM?

- **Not** recess!
- Four Premises:
  - Time
  - Activities
  - Initiation
  - Nature
- Anything done indoors can also be done outdoors

Nelson, E. (2012). Cultivating Outdoor Classrooms: Designing and Implementing Child-Centered Learning Environments. St. Paul, MN: Redleaf Press.

CHARACTERISTICS

- Indoor outdoor flow/safe and easy to get children outdoors
- Wide range of activities to participate in, including traditionally "indoor" activities
- Includes quiet spaces in addition to physically active areas
- Allows for child-initiated experiences with teacher support
- Curriculum is always evolving and based on children's interests
- Nature is experienced in every way possible

- http://outdoorclassroomproject.org/about/the-outdoor-classroom/

INDOOR/OUTDOOR FLOW

- Ideally, children should have the freedom to choose whether to be indoors or outdoors
- Challenges:
  - Requires a LOT of communication among teachers
    - Maintaining ratios
    - Knowing where every child is at all times
    - Outdoors, not just responsible for the children in their "class"
  - May require additional staffing
  - Not every center or classroom has a door leading directly outside
    - Requires creativity on the part of teachers

REFLECTION QUESTION

Considering indoor/outdoor flow and the many challenges it may present, what additional challenges might your center face? What are some potential solutions?

BENEFITS TO CHILDREN

- Increases mobility
- Decreases risk of obesity
- Less stress
- Fewer child-child conflicts
- Wider range of activities and experiences
- Sense of empowerment and self-confidence
- Heightened awareness and understanding of the world
- Increased sense of wonder, joy and awe

BENEFITS TO TEACHERS

- Reduces crowding
- Reduces stress
- Adds a sense of peace/calm
- Fewer child-child conflicts
- Adds a variety of experiences
- Reduces boredom
- Inhibits the spread of illness

WHAT EXPERIENCE IS NEEDED?

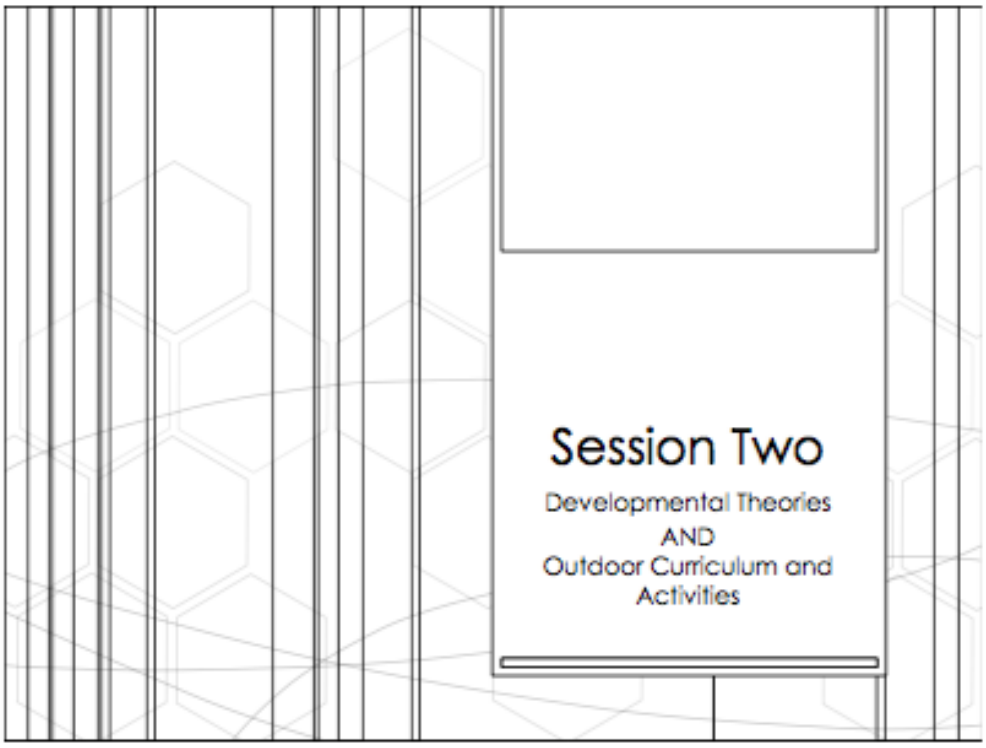
- To successfully utilize an outdoor classroom, teachers/programs need...
  - An awareness of the challenges children face
  - An understanding of developmental theory
  - A vision
  - The ability to implement an outdoor curriculum
  - The ability to assess children's progress outside

These trainings will help you do these and more!

Nelson, E. (2012). Cultivating Outdoor Classrooms: Designing and Implementing Child-Centered Learning Environments. St. Paul, MN: Redleaf Press.

APPENDIX G

SESSION TWO: DEVELOPMENTAL THEORIES


Session Two
Developmental Theories
AND
Outdoor Curriculum and
Activities


Developmental Theories

John Dewey

- Industrial Revolution
- Real learning takes place outside
- Experience
- Children as reflective thinkers
- Curriculum

Maria Montessori

- Beauty
- Real-work
- Development
- Immersion
- Large blocks of open-ended time
- Opportunities

Friedrich Froebel

- Holistic development
- Children learn best by doing
- Wider community
- Initiation
- Kindergartens
  - Gifts and occupations

Erik Erikson

- Not directly related to nature
- Humans must work through "psychosocial crises"
- Interactions
  - Positive
  - Negative

Age	Conflict	Resolution
Infancy (0-1)	Basic trust vs. mistrust	Hope
Early Childhood (1-3)	Autonomy vs. shame and doubt	Will
Play Age (3-6)	Initiative	Purpose

Howard Gardner

- Theory of multiple intelligences
- Naturalist intelligence

Edward O. Wilson

- "Biophilia"
  - Humans innately drawn to the natural worlds
- Today's children:
  - "Biophobia"

Developmental Theories Related to the Outdoor Classroom

John Dewey

- Industrial Revolution as responsible for changing childhood
  - Children denied the opportunity to work and learn outdoors
    - Felt this helped children develop character
    - Traditional learning models restrict individual development
- Real learning takes place outside
  - This is where life occurs
  - Indoor lessons deny children a connection with the materials teachers try to engage them with
- Viewed experience as central to education
- Believed children have a desire to "investigate and discover things with inquiry" (Marion, 2010, p. 36)
- Children are reflective thinkers
  - Enhances problem solving
  - Connects what they know with what they still have to find out
- Outdoors = endless possibilities
- Curriculums should be centered around children's interests
  - Children NOT viewed as sponges
  - Children confront an issue and work to solve the problem
- Curriculum should be "engaging and relevant"
  - Appropriately challenging
  - Meaningful
  - Integrated

Maria Montessori

- Saw beauty in natural environments
  - Naturally invigorate children's senses
- Immersion in nature/gardening
  - Rich learning opportunities
    - Allow children to choose work based on their interests
  - Promote physical and psychological development
- Believed in real-work for children
  - Real, child-sized tools
- Children should be allowed to develop at their own pace
- Large blocks of open-ended time
  - Deeper, richer learning experiences
  - True engagement with the world
- Teachers should allow children opportunities to demonstrate their competence

Friedrich Froebel

- Children learn best by doing
- Parents as children's first teachers but exposure to the wider community is beneficial
  - This community includes nature
- Holistic development through play
  - Children's "work"
- Nature allows children to initiate their own learning experiences
- These ideas led to the establishment of Kindergartens
  - Children can develop through "gifts" and "occupations"
  - Child-initiation
  - Daily excursions into the real world

Erik Erikson

- Stage theorist
- Ideas not directly related to nature but connected to those of Montessori and Froebel
- Humans must work through various "psychosocial crisis"
  - Interactions with the environment determine the outcome
    - Positive: move on to the next stage
    - Negative: do not move forward
- Trust vs. mistrust (Birth– 18 months)
  - Supportive, emotionally available caregiving
  - Being there for children when they need you
  - Needs consistently met = positive outcome
  - Needs not met consistently = negative outcome
- Autonomy vs. shame and doubt (18 months to 36 months)
  - Toddlers encouraged to do things themselves = positive outcome
  - Adults do everything for the children = negative outcome
    - Independence should only be encouraged when it is safe and appropriate
  - Montessori: experience with real tools and establishment of competence
  - Froebel: autonomy developed through play, a time in which children's learning is separate from their parents
- Initiative vs. guilt (3 to 5 years)
  - Adults encourage children's exploration of the world = positive outcome
  - Children's questions and curiosity are not encouraged or are denied = negative outcome
  - Montessori and Froebel: allowing children the freedom to plant and develop gardens and experience nature on their own rewards children by allowing them to take initiative

- Dewey: Children active participants in their learning experience; children should be encouraged to seek answers and information on their own

Howard Gardner

- Theory of multiple intelligences
  - Intelligence is not one general ability
  - Originally 7 alternate forms of intelligence
  - First to be added to the original 7 was naturalist intelligence
- Naturalists
  - Show a strong infinity for the outdoors
  - Good at categorizing, labeling
  - Thrive from hands-on experiences

Edward O. Wilson

- Believed humans are innately drawn to the natural world
- Genetically wired to seek contact with nature—"biophilia"
  - Supported by research that shows humans respond strongly to natural, wide-open spaces
- Need that emerges in early childhood
- "Biophobia" becoming more common; fear of nature
  - Need to reconnect children with nature before it is too late

Checkley, K. (1997). The first seven ... and the eighth - a conversation with Howard Gardner. *Educational Leadership, 55*(1), 8-13.

Crain, W. (2001). How nature helps children develop. *Montessori Life, 13*(3), 22.

Gardner, H. (2011). *Frame of mind: The theory of multiple intelligences*. New York, NY: Basic Books.

Johnson, K. (2013). Montessori and nature study: Preserving wonder through school gardens. *Montessori Life, 25*(3), 36.

Joyce, R. (2012). *Outdoor learning: Past and present*. England, GB: Open University Press.

Kahn, P. (1997). Developmental psychology and the biophilia hypothesis: Children's affiliation with nature. *Developmental Review, 17*(1), 1-61.

Marion, M. (2010). *Introduction to early childhood education: A developmental perspective*. New Jersey: Pearson.

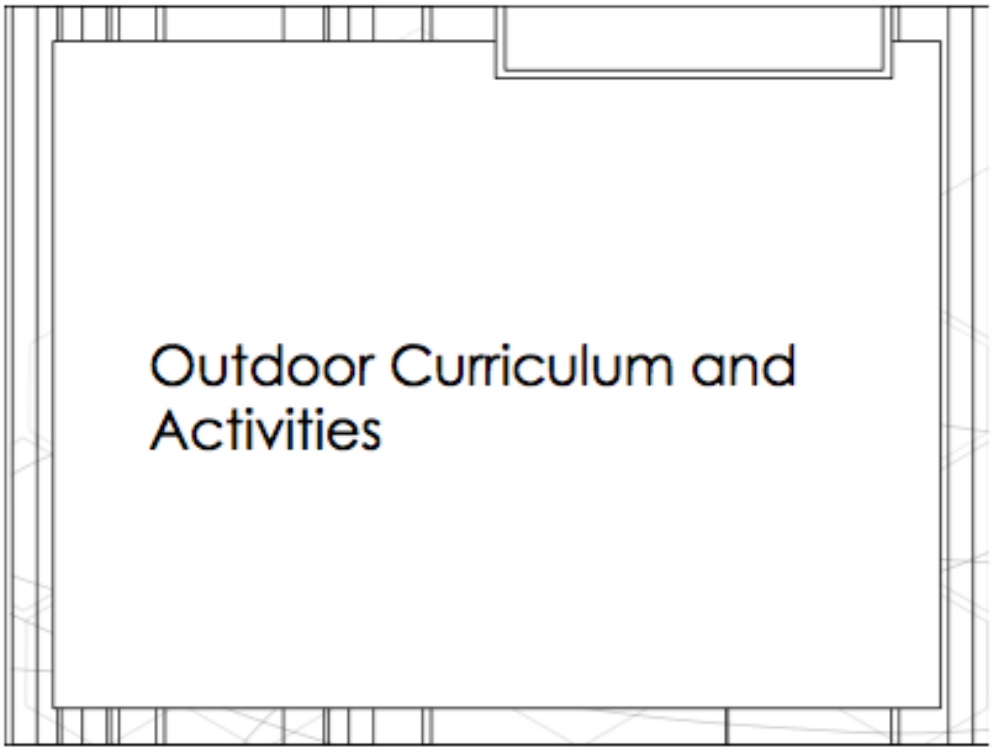
Mooney, C. G. (2013). *Theories of childhood, second edition: An introduction to Dewey, Montessori, Erikson, Piaget & Vygotsky*. St. Paul, MN: Redleaf Press.

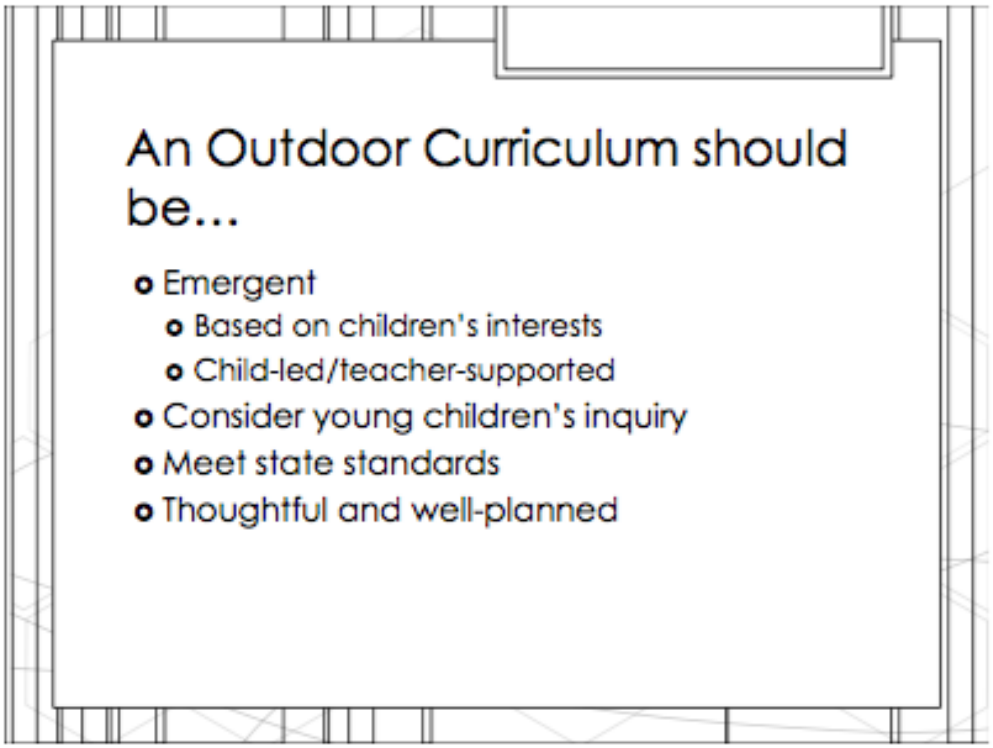
Rivkin, M. (1998). “Happy play in grassy places”: The importance of the outdoor environment in Dewey’s educational ideal. *Early Childhood Education Journal, 25*(3), 199-202.

Wilson, E. O. (1984). *Biophilia*. Cambridge, MA: Harvard University Press.

APPENDIX H

SESSION TWO: OUTDOOR CURRICULUM AND ACTIVITIES


Outdoor Curriculum and Activities


An Outdoor Curriculum should be...
Emergent
Based on children's interests
Child-led/teacher-supported
Consider young children's inquiry
Meet state standards
Thoughtful and well-planned

The Project Approach

- Project-based learning
- In-depth investigation of real-world topics
- Interactive
- Students construct knowledge, teacher's facilitate and support it
- Consists of 3 Phases:
  - Beginning the Project
  - Developing the Project
  - Concluding the Project
- See Handout 3
- Based on young children's inquiry

What is The Project Approach? - The Project Approach. (n.d.). Retrieved April 1, 2015, from http://projectapproach.org/about/project-approach/

Young children's inquiry

- See Handout 4
- Inquiry…
  - Is dynamic
  - Begins with engagement/wondering
  - Leads to more focused observation and questions
  - Develops questions that focus observation and leads to further investigation
  - Is cyclical
  - Allows children to "share, discuss, reflect, and draw conclusions.

Chalufour, I., & Worth, K. (2003). *Discovering nature with young children (Trainer's guide)*. St. Paul, MN, Red Leaf Press.

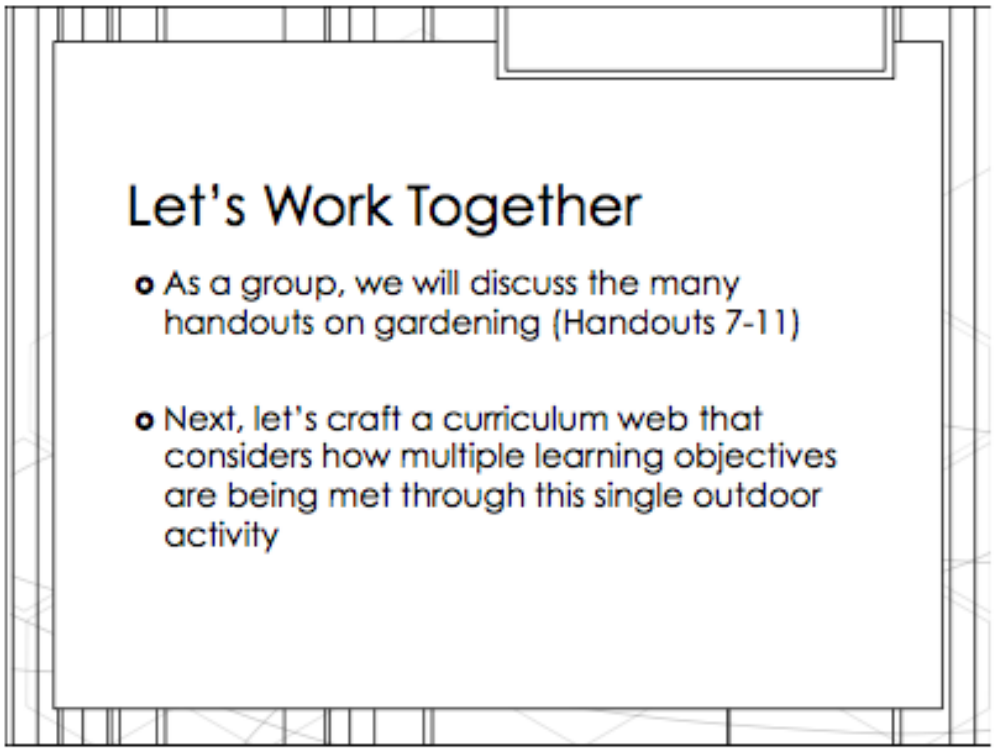
Child-initiation

- See Handout 5
- Projects allow children to have more child-initiation and involvement in decision-making.

Helm, J. H. & Katz L. (2011). *Young Investigators: The Project Approach in the Early Years*. New York, NY: Teacher's College Press.

Meeting Standards

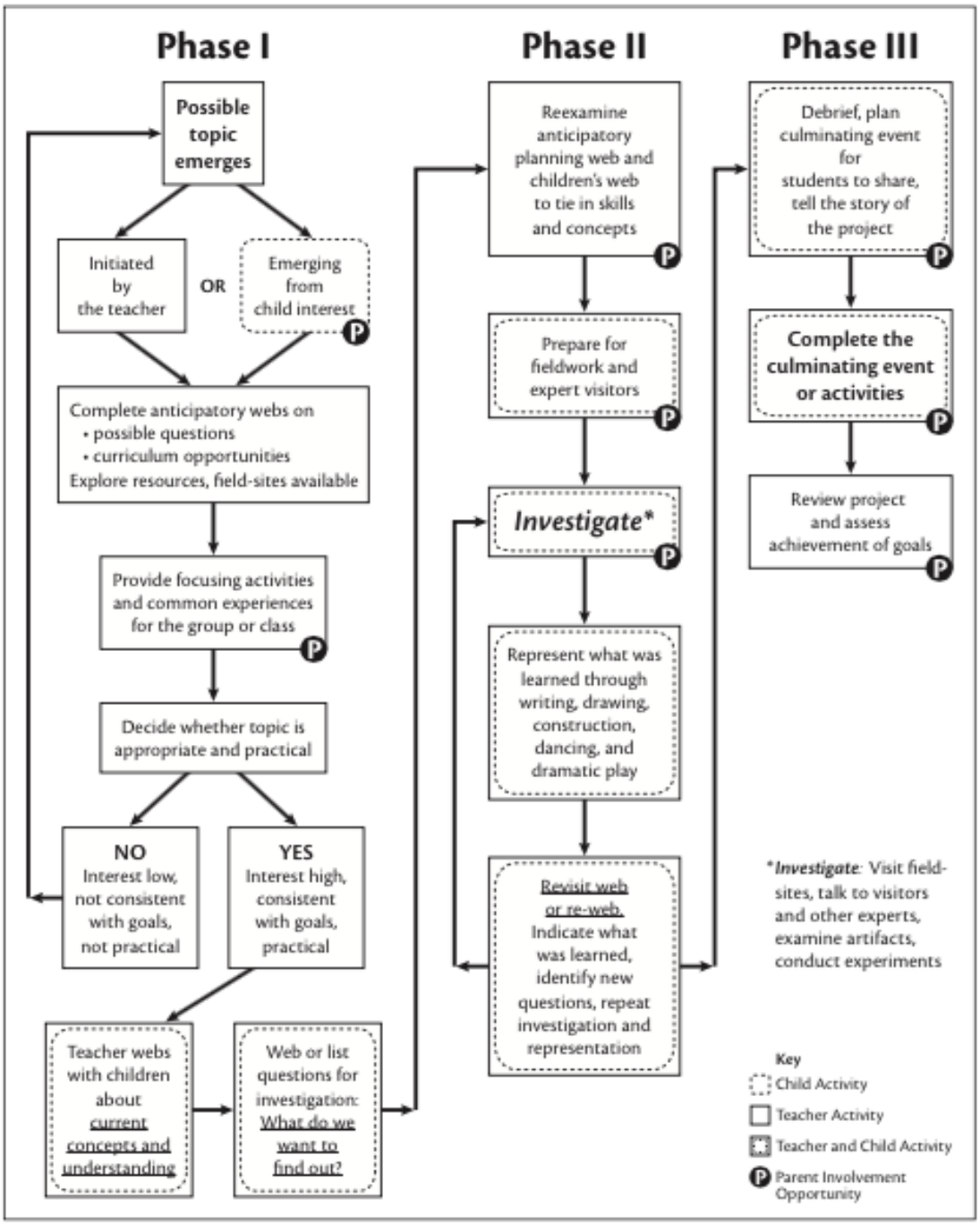
- See Handout 6
- Allowing more child-initiation and decision-making does NOT mean standards are not met!


Let's Work Together
As a group, we will discuss the many handouts on gardening (Handouts 7-11)
Next, let's craft a curriculum web that considers how multiple learning objectives are being met through this single outdoor activity


Supporting Children's Development
Loose parts
Handouts 12-13
Make-believe/dramatic play
Handouts 14-15
Awakening Children's Senses
Handout 16
Physical Development
Handouts 17-21

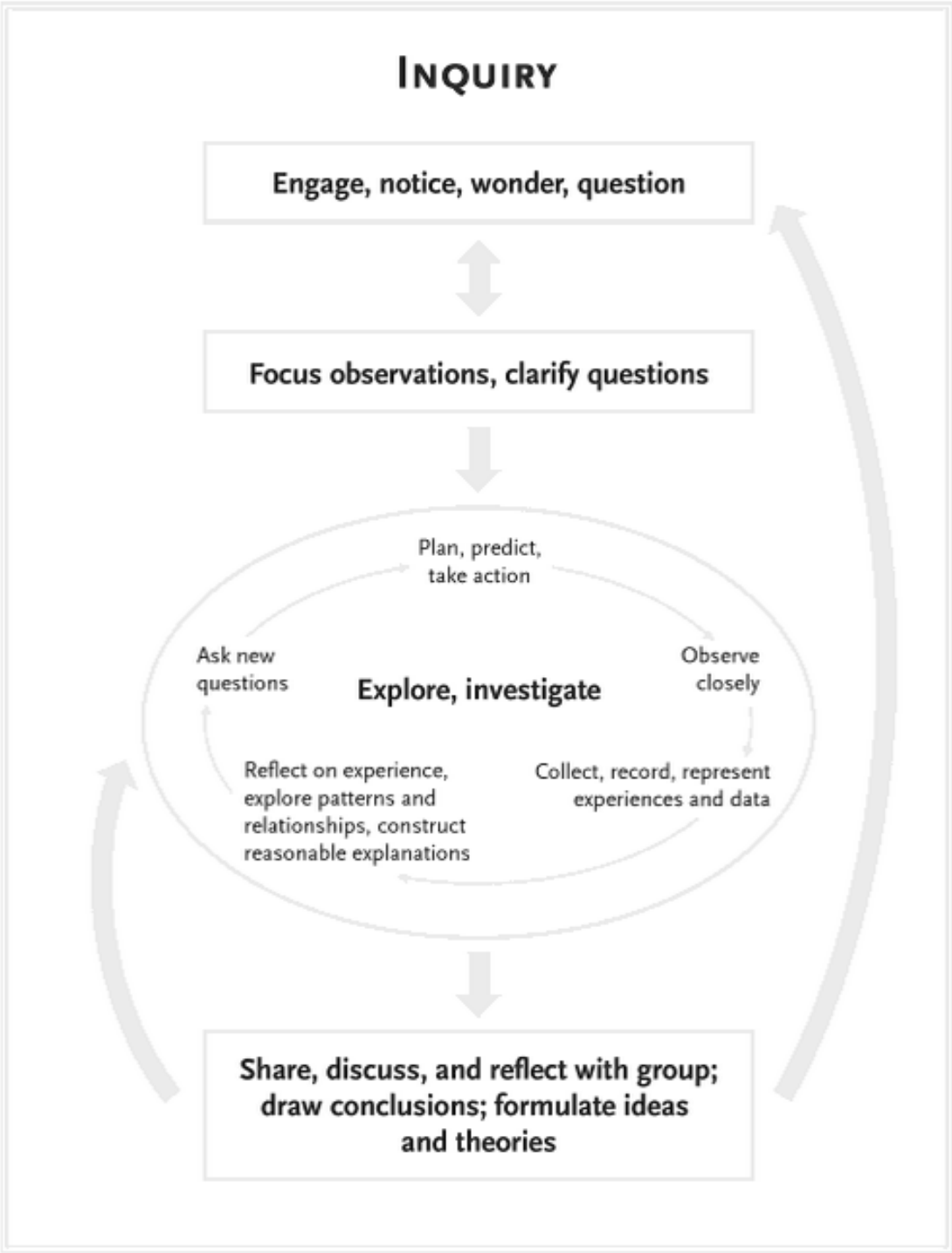
Phases of a Project

FIGURE 1.5 • Phases of a project



Helm, J. H. & Katz L. (2011). *Young Investigators: The Project Approach in the Early Years*. New York, NY: Teacher's College Press.

Young Children's Inquiry



Chalufour, I., & Worth,K. (2003) *Discovering nature with young children.* St.Paul, MN: Redleaf Press.

Degree of child-initiation and decision-making

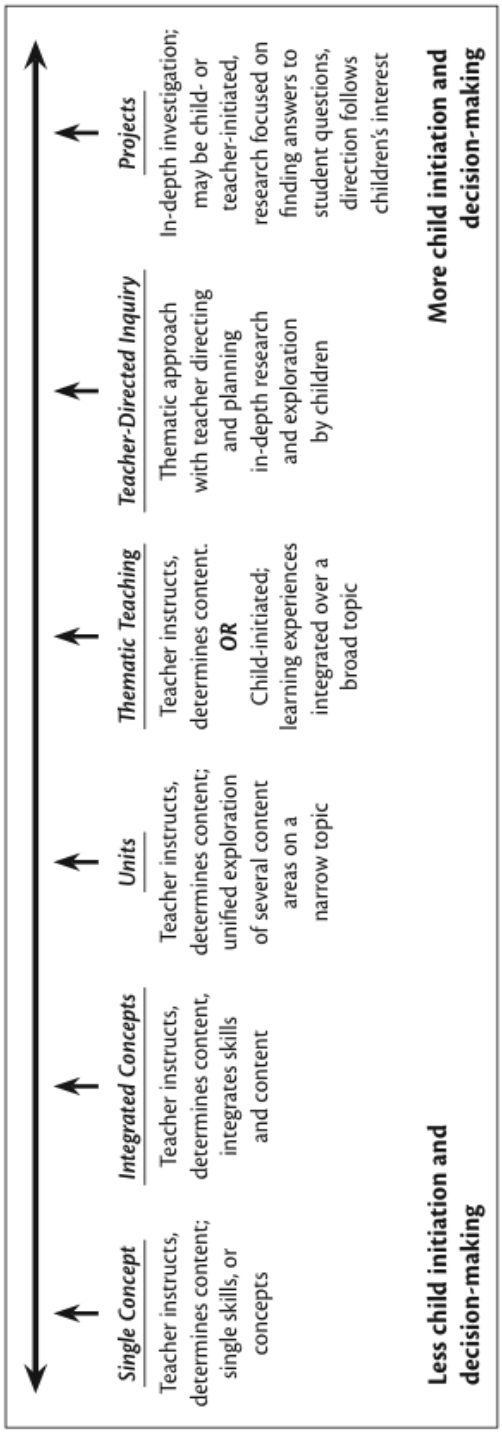


FIGURE 1.1 • Degree of child initiation and decision-making in different approaches to teaching

Helm, J. H. & Katz L. (2011). *Young Investigators: The Project Approach in the Early Years*. New York, NY: Teacher's College Press.

Experiences in Nature Meet Multiple Standards

	Toddlers Connect in Nature Age 20 Months	Sequojah Conducts a Careful Investigation Age 3 Years	Derek Compares and Classifies Plants Age 4 Years	Children Discuss How Roots Work Age 5 Years
		Social-emotional		
Nebraska Early Learning Guidelines	**Sense of Self** Child develops independence, confidence, and competence.	**Self-concept** Child develops independence, confidence, and competence.	**Cooperation** Child increases ability to sustain relationships.	**Cooperation** Child increases ability to sustain relationships.
***The Creative Curriculum Developmental Continuum* Goals**	**Manages Own Feelings (1-3:1)** Expresses a variety of emotions and needs, using facial expressions, body movements, and vocalizations.	**Sense of Self (1: III)** Shows ability to adjust to new situations: Functions with increasing independence in school.	**Responsibility for Self and Others (5:III)** Demonstrates self-direction and independence: Carves out and completes own task without adult assistance.	**Prosocial Behavior (13:III)** Uses thinking skills to resolve conflicts: Engages in a process of negotiation to reach compromise.
		Physical		
Nebraska Early Learning Guidelines	**Fine Motor** Child actively explores the environment and manipulates objects.	**Gross Motor** Child develops coordination, balance, spatial awareness, and strength through gross motor activities.	**Gross Motor** Child develops coordination, balance, spatial awareness, and strength through gross motor activities.	**Fine Motor** Child explores drawing and painting materials.
***The Creative Curriculum Developmental Continuum* Goals**	**Demonstrates Basic Gross Motor Skills (2-8:1)** Begins moving purposefully.	**Gross Motor (16:III)** Climbs up and down: Climbs in place easily on ramps, stairs, ladders, or sliding boards.	**Fine Motor 20:III** Coordinates eye and movement: Manipulates materials in a purposeful way, planning and attending to detail.	**Fine Motor (21:III)** Uses tools for writing and drawing: Copies and draws shapes, letters and words, including name.
		Language		
Nebraska Early Learning Guidelines	**Speaking and Communicating** Child communicates for a variety of purposes.	**Speaking and Communicating** Child uses English or native language to share feelings and express ideas.	**Speaking and Communicating** Child communicates needs, wants, or thoughts through words, gestures, actions, or expressions.	**Listening and Understanding** Child listens to others and responds to feelings and expressed ideas
***The Creative Curriculum Developmental Continuum* Goals**	**Develops Expressive Language (4-17:1)** Uses facial expressions, body positions and movements, and distinct cries or other vocalizations to communicate.	**Listening and Speaking (39:I)** Expresses self using words and expanded sentences: Uses simple sentences (3–4 words) to express wants and needs.	**Listening and Speaking (42:III)** Asks questions: Asks increasingly complex questions to further own understanding.	**Listening and Speaking (43:II)** Actively participates in conversations: Responds to others' comments in a series of exchanges.
		Cognitive		
Nebraska Early Learning Guidelines	**Scientific Knowledge** Child develops scientific knowledge through active exploration of the environment.	**Scientific Skills and Methods** Child uses senses, materials, events in nature, and the environment to investigate and expand knowledge.	**Scientific Knowledge** Child develops increased ability to observe and discuss things that are common and things that are different.	**Reasoning and Problem Solving** Child reflects on experiences and information, and interprets or draws conclusions based on the information
The Creative Curriculum Developmental Continuum	**Understands How Objects Can Be Used (3-11:2)** Learns how objects work by handling them and watching others use them.	**Learning and Problem Solving (22:III)** Observes objects and events with curiosity: Observes attentively and seeks relevant information.	**Learning and Problem Solving (24:II)** Shows persistence in approaching tasks: Continues to work on task even when encountering difficulties.	**Representation and Symbolic Thinking (37: II)** Makes and interprets representations: Draws or builds a construction that represents something specific.

Sources: Nebraska Early Learning Guidelines (Lincoln: Nebraska Department of Education and Health and Human Services System, 2005), www.nde.state.ne.us/ech/ELGuidelines/ELG_IT.pdf; *The Creative Curriculum Developmental Continuum for Infants, Toddlers, & Twos* (Washington, DC: Teaching Strategies, 2006); and *The Creative Curriculum Developmental Continuum for Ages 3–5* (Washington, DC: Teaching Strategies, 2005).

24

Benson, J., & Miller, J. (2008). Experiences in nature: A pathway to standards. *Young Children, 63*(4), 22-28.

Gardening with Young Children

Gardening is…

- Motivated by what the children want to learn
- A social experience—children of all cultures and degrees of development are included
- Stimulating—it allows children to explore their senses
- Relaxing—it allows children to take a step back and enjoy the beauty and wonder of life

Hachey, A. C. & Butler, D. L. (2009). Seeds in the window, soil on the sensory table: Science education through gardening and nature-based play. *Young Children, 64*(6), 42-48.

Gardens in the classroom should…

- Be child initiated and cared for
- Be a retreat or sanctuary for children, as well as a place of beauty
  - Think of the Secret Garden
- Connect children to their home and family
  - Gardens are the perfect way to introduce diversity and multiculturalism
- Be a source of healthy eating
  - Help children know and understand where food comes from

Gardening helps children…

- Connect to nature
- Reflect their culture
  - Through what is planted
- Develop scientific thinking
- Engage with multiple learning elements
  - Ability to engage in multiple developmental domains through one aspect

Gardening is the single easiest way to connect children with nature while maximizing on the available learning opportunities that come from it.

Online Gardening Resources:

- Kid's Gardening— http://www.kidsgardening.org/
- Gardening With Children — http://eartheasy.com/grow_gardening_children.htm
- My First Garden— http://extension.illinois.edu/firstgarden/
- Gardening Know How— http://www.gardeningknowhow.com/special/children/
- National Gardening Association—http://assoc.garden.org

NON-TOXIC PLANT LIST

The following plants are considered to be “good” or nonpoisonous. Symptoms from eating or handling small amounts of these plants are unlikely to occur.

Abelia
African daisy
African violet
Air fern
Aluminum plant
Asparagus fern
Aster
Baby’s breath
Baby tears
Bachelor button
Bamboo
Begonia (except sand begonia)
Bleeding heart vine
Bloodleaf plant
Boston fern
Bromeliad
Bougainvillea
Butterfly tulip
Cactus, Christmas
Camellia
Chinese evergreen
Coleus
Columbine
Corn plant
Croton (Codiaeum)
Creeping Charlie (house plant)
Dahlia
Dandelion
Dionaea muscipula (Venus flytrap)
Dracaena
Easter lily
Elm tree
Eugenia
False aralia
Fittonia, red
Forsythia
Friendship plant
Fuchsia
Gardenia
Gloxinia
Goldfish plant
Grape ivy
Hawthorne
Hens and Chicks
Hibiscus
Impatiens
Jade plant
Japanese aralia
Kalanchoe
Lipstick plant
Maidenhair fern
Magnolia bush
Marigold
Mountain ash
Nasturtium
Parlor palm
Patient Lucy
Peperomia
Petunia
Phlox
Piggyback plant
Polka dot plant
Prayer plant
Pregnant plant
Purple passion
Rose
Schefflera
Snapdragon
Snake plant
Snowball bush Spider plant
Spider aralia
Staghorn fern
Swedish ivy
Swordfern
Tiger lily
Umbrella tree
Velvet plant

Wandering Jew
Wild onion
Yucca
Zebra plant
Zinni, creeping

Fruits and vegetables are always good options to plant as well. Always make sure to check with your local licensing agency to make sure the plants you are considering are allowed!

Plant Safety. (n.d.). Retrieved from: http://www.ohsu.edu/xd/outreach/oregon-poison-center/you-and-your-family/plantsafety.cfm

Tips for Gardening Safety

Make sure the foundation is safe:

- Locate the garden away from sources of potential contamination (trash collection areas, septic systems, etc.)
- Avoid using building materials that has been treated
- Use stakes that are taller than the children to avoid eye injuries

Practice tool safety:

- Allow children to use (real) child-size gardening tools but teach them how to use them properly
- Make sure all tools are in good condition (no sharp metal parts, splinter-free handles, etc.)
- Store tools when not in use

Use proper soil and water:

- Make sure soil is pesticide and lead free
- Only use drinking water to water your garden

Discuss garden safety:

- Even if you are growing a non-toxic garden, teach children to ask before eating a plant (you never know what they might find elsewhere!)
- Work with children to create guidelines for the garden and post the guidelines nearby (such as washing hands after working in the garden)

Communicate with families

- Check with families to make sure their children aren't allergic to certain plants, bee stings, etc.
- Talk to families about your plans and respond to concerns they might have

Planting Smart. (n.d.). Retrieved from http://www.naeyc.org/tyc/article/planting_smart

Teaching Plan for Gardening

Step 1: Grow Plants

- Begin with a group discussion
  - Invite children to share their own experiences with plants/gardening
  - Ask questions
    - How did you start growing the plants?
    - What did you do to care for the plants?
    - What do you think plants need to grow?
- Discuss ways children can take care of growing plants
  - Introduce children to gardening tools
  - Teach children about tool and gardening safety
  - Explore differences between tools
  - Ask children to share experiences they may have had with tools in the past
- Guide the planting
  - Choose plants as a group
    - Children might have ideas about what to grow, such as a pizza garden that grows vegetables and herbs to make pizzas with
  - Help children with the process of planting
    - Set up a planting center where children can practice potting plants and digging in soil
    - Help children label plants (this allows you to know what is growing where and supports literacy development!)
- Invite children to describe and draw their planting experience
  - Promotes thinking about past experiences (reflective thinking)
  - Supports literacy /language development
  - Provides documentation of children's development
- Observe and document children's planting experiences
  - Assessment opportunities and proof of children's development
  - Notice patterns in children's development to guide future planning
- Reflect with the children
  - Help them discuss/consider how they planted and what plants looked like previously
  - Talk about plants needs, how the children will have to care for their plants, and ways in which the children think they can help the plants grow

Step 2: Monitoring plant growth and development

- Engage
  - Discuss how plants grow with the children
  - Reflect on what plans looked like previously and discuss the ways in which the plants are changing
    - Encourage children to draw and document these changes

    - Discuss ways to track plant growth and development
        - Introduce children to charts and graphs that help them track development
        - Discuss tools that can be used to track changes (measuring tape, ruler, photographic evidence, drawings, etc.)
            - Ask questions! Encourage children to consider ways in which they could measure a curvy plant, how they will track plants that grow new leaves or flower bulbs, etc.
- Explore
    - Help children notice changes in their plants' development
        - Have children consider how plants looked previously, what has changes, and consider what they think will happen to the plants next (make predictions)
        - Revisit past documentation developed by the children (such as their drawings) and consider if their previous predictions have come true or if something they did not consider happening has happened
        - Guide children to notice changes
            - Help them consider how the plants change colors, sprout new leaves, etc.
    - Record the changes
        - Create a graph that measures plant development over time and continue tracking changes.
        - Compare photographs of plants through the weeks to consider ways in which the plants have changed
        - Encourage children to create their own documentation (drawings, writing, etc.) and continue making predictions
- Observe and document
    - Record children's observations
    - Take pictures of children as they explore and document their garden
    - Document ways in which children have cared for the plants individually and what they notice about the plants' development
- Reflect
    - In small groups or as a class, invite children to compare their experiences with the plants and what they have noticed about the process
    - Read books about plants and set up a library of relevant, age-appropriate literature
        - Invite children to compare their own experiences with those in the book

Step 3: Evaluate children's interests and determine if the project should go on

- If children are still interested, consider expanding by examining:
  - Parts of a plant
  - Different kinds of leaves
  - Roots
  - Flowers
  - Seeds
  - Conduct monthly tree/bush observations to observe how they change throughout the seasons
- Follow the same process seen in step 2 for each of these topics for as long as the children are interested (i.e., engage, explore, reflect).

Chalufour, I., & Worth,K. (2003) *Discovering nature with young children.* St. Paul, MN: Redleaf Press

Gardening Books for Children

Allen, Judy and Humphries, Tudor. *Are You an Ant?*

Allen, Judy and Humphries, Tudor. *Are You a Bee?*

Allen, Judy and Humphries, Tudor. *Are You a Butterfly?*

Allen, Judy and Humphries, Tudor. *Are You a Dragonfly?*

Allen, Judy and Humphries, Tudor. *Are You a Grasshopper?*

Allen, Judy and Humphries, Tudor. *Are You a Ladybug?*

Allen, Judy and Humphries, Tudor. *Are You a Snail?*

Allen, Judy and Humphries, Tudor. *Are You a Spider?*

Blackaby, Susan. *Green and Growing: A Book About Plants*

Bodach, Vijaya Khisty. *Flowers*

Bodach, Vijaya Khisty. *Leaves*

Bodach, Vijaya Khisty. *Roots*

Bodach, Vijaya Khisty. *Seeds*

Bodach, Vijaya Khisty. *Stems*

Brown, Peter. *The Curious Garden*

Burnie, David. *Plant*

Carle, Eric. *The Tiny Seed*

Cronin, Doreen. *Diary of a Worm*

Ehlert, Lois. *Eating the Alphabet*

Ehlert, Lois. *Growing Vegetable Soup*

Ehlert, Lois. *Planting a Rainbow*

Ehlert, Lois. *Red Leaf, Yellow Leaf*

Esbaum, Jill. *Seed, Sprout, Pumpkin Pie*

Gibbons, Gail. *From Seed to Plant*

Gerardi, Jan. *The Little Gardner*

Heiligman, Deborah. *From Caterpillar to Butterfly*

Jordan, Helene. *How a Seed Grows*

Koontz, Robin. *Composting: Nature's Recyclers*

Maestro, Betsy. *Why do Leaves Change Colors?*

Mallet, David. *Inch by Inch, the Garden Song*

Nelson, Kadir. *If You Plant a Seed*

Pattou, Edith. *Mrs. Spitzer's Garden*

Pfeffer, Wendy. *Wiggling Worms at Work*

Pfeffer, Wendy. *From Seed to Pumpkin*

Rockwell, Anne. *Bugs are Insects*

Rockwell, Lizzie. *Plants Feed Me*

Rosinsky, Natalie. *Dirt: The Scoop on Soil.*

Tomecek, Steve. *Dirt*

Loose Parts

Loose parts are materials that have no pre-defined use and encourage imagination. They have no specific directions or uses associated with them and can be used alone or together for whatever purposes a child sees as fit.

Loose parts encourage creativity, as children are inspired to use objects in novel ways. Environments that include loose parts are more stimulating and encourage, promote and support imaginative play in children as children are allowed to develop and explore their own ideas.

Loose parts should…

- Have no defined use and children should be allowed to use materials freely, in any way they see fit
- Be accessible and stored where children can easily access them without having to ask
- Be regularly added to and replenished according to children's current needs and interests

Loose parts…

- Have no pre-defined use; children can decide how the parts should be used and manipulated
- Can be adapted to fit a certain purpose
- Develop advanced skills and competence when compared to plastic toys with preconceived notions of use
- Can be used in combination with other materials
- Encourage open-ended learning

Kable, J. (2010, February 10). *Theory of loose parts (Blog post)*. Retrieved from http://www.letthechildrenplay.net/2010/01/how-children-use-outdoor-play-spaces.html

Examples of Loose Parts

Natural:

- Stones (heavy enough for children to use in construction projects, but too heavy to throw)
- Stumps
- Logs
- Large branches
- Small twigs
- Sand Gravel
- Water Leaves
- Pebbles
- Seeds

Manufactured:

- Recycled car and bicycle tires (avoid steel-belted radials)
- Pallets
- Wooden or plastic crates (milk crates are favorites)
- Buckets
- tubs
- laundry baskets
- Plastic garden pots
- Boxes
- Gutters
- Drain tile
- PVC pipe
- Wood: two-by-fours, four-by-fours, and planks of different lengths
- Rope Chain
- Cardboard rolls and tubes of all sizes
- Large- and medium-sized wooden reels
- Plastic bottles
- Landscape netting
- Ice cream tubs
- Fabric (light-weight)
- Tarps or drop cloths
- Hoops (Hula and others)
- Weather-proof cushions
- Bricks
- Outdoor tools
- Mesh (canvas or metal, with different sized openings)
- Chalk

Location/Season dependent (e.g., marine, rural, urban, rivers and creeks, forests, etc.)

- Sea shells
- Kelp
- Seaweed
- Beach rocks
- Driftwood
- Hay bales
- Bunches of wild grasses
- Cornstalks
- Tractor tires
- Tractor seats
- Troughs
- Old street signs
- Traffic cones
- Construction debris (thoroughly sorted for safety)
- Hubcaps
- Car parts
- Cattails and other wetland reeds
- River and creek rocks
- Logs
- Spanish moss
- Seed pods, acorns, pine cones of all sizes
- Large ferns
- Palm fronds
- Recycled natural Christmas trees
- Pumpkins

Neill, P. (n.d.). Open-Ended Materials Belong Outside Too! *HighScope Extensions, 27*(2), 1-8. Retrieved from http://www.highscope.org/file/NewsandInformation/Extensions/ExtVol27No2_highrez.pdf.

“Assessing and Scaffolding Make-Believe Play”

Make –believe play—”a fantasy world created by children where their imagination soars, their language expands, and their social skills develop” (Leong & Bodrova, 2012, p. 28)

Well-developed make-believe play:

- Increases children’s social development
- Supports emerging mathematical development
- Helps children master early literacy concepts
- Increases the development of self-regulation

To reach this fully developed level of play, children need adult support.

- Adults are children’s “play mentors”

To be a play mentor, teacher’s must…

- Determine what level children’s play is at
- Decide what type of scaffolding is most appropriate
- Thoughtfully plan how to support children’s development

Scaffolding throughout the stages of Make-Believe Play (see Handout 14):

- Planning
  - Ask questions
    - What do the children want to play?
    - Who do the children want to be?
    - What props might they need?
  - “Encourage children to discuss roles with their peers”
  - Planning can take place orally, written, or through drawings

- Roles
  - Teachers may need to explain social rules
    - Ex: May have to explain why someone can’t simply go into a restaurant and grab food and the appropriate sequence of events that need to take place
  - Play scripts of how various scenarios progress help children learn about the world and develop self-regulation skills

- Props
  - Children need help learning how to use open-ended materials (loose parts)
  - Teachers may need to demonstrate the symbolic representation of objects
    - Progressively show children how to use one object in multiple ways
  - Children can make their own props
    - From scratch
    - Demonstrate how to make modifications to existing props to fit new play scenarios
- Language
  - Assign new names to toy props
    - Helps children with the symbolic nature of words
  - "Role speech"
    - Help children learn about the role and what a person in that role may say
      - Vocabulary specific to a role that might not be used otherwise
    - Books, field trips
  - To help children with new vocabulary and extend play scenarios, a teacher may assume a secondary role (customer, patient, etc.) to prompt and guide children

- Scenarios
  - Help build background knowledge about less known topics
    - (Similar to what was done with language)
  - Field trips, books, videos, pictures, guest speakers

Teachers' role as "play mentor" will typically last a short amount of time

- May need to be revisited occasionally
- Most make-believe play should be allowed to unfold on it's own once children understand how to do it at a deeper level

Leong, D. J., & Bodrova, E. (2012). Assessing and scaffolding make-believe play. *Young Children, 67*(1), 28-34.

Stages of Make-Believe (Dramatic/Imaginative) Play

Five Stages in a Child's Make-Believe Play

	1. First Scripts	2. Roles in Action	3. Roles with Rules and Beginning Scenarios	4. Mature Roles, Planned Scenarios, and Symbolic Props	5. Dramatization, Multiple Themes, Multiple Roles, and Director's Play
Plan	Does not plan during play.	Does not plan during play.	Plans roles; actions are named prior to play.	Plans each scenario in advance.	Plans elaborate themes, scenarios, and complex roles. Spends more time planning than acting out the scenario.
Roles	Does not have roles.	Acts first and then decides on roles. No rules are revealed.	Has roles with rules that can be violated.	Has complex, multiple roles.	Can play more than one role at a time. Roles have social relationships.
Props	Plays with objects as objects.	Plays with objects as props. Actions with a prop result in a role.	Needs a prop for the role.	Chooses symbolic and pretend props.	Can pretend rather than actually have a prop. Does not need a prop to stay in the role. Objects can have roles.
Extended time frame	Explores objects, but not play scenarios.	Creates scenarios that last a few minutes.	Creates scenarios that last 10–15 minutes.	Creates scenarios that last 60 minutes or longer. With support, can create scenarios that last over several days.	Creates scenarios that last all day and over several days. Play can be interrupted and restarted.
Language	Uses little language.	Uses language to describe actions.	Uses language to describe roles and actions.	Uses language to describe roles and actions. Uses role speech.	Uses language to delineate the scenario, roles, and action. Book language is incorporated into role speech.
Scenario	Does not create a scenario. Can copy what the teacher does and says or will follow the teacher's directions if script is simple and repetitive.	Creates a scenario that is stereotypical, with limited behaviors. Can incorporate modeled roles and actions into play, with support.	Plays familiar scripts fully. Accepts new script ideas.	Plays a series of coordinated scenarios that change in response to previous ones or the desires of players. Describes unfolding scenario, roles, and actions.	Plays a series of coordinated scenarios that change in response to previous ones or the desires of players. Uses themes from stories and literature.

Leong, D. J., & Bodrova, E. (2012). Assessing and scaffolding: Make-believe play. *Young Children 67*(1), 28-34.

Awakening Children's Senses

Smelling and Tasting

- Garden
  - Herbs, flowers, vegetables, fruits
- Rain
  - Smell on the asphalt, taste on the tongue, etc.
- Grass
- Breeze

Listening

- Living creatures
  - Birds and their different calls/chirps
  - Frogs
  - Crickets
  - Bunnies
- Weather sounds
  - Rain
  - Hail
  - Thunder
  - Lightening
  - Strong winds

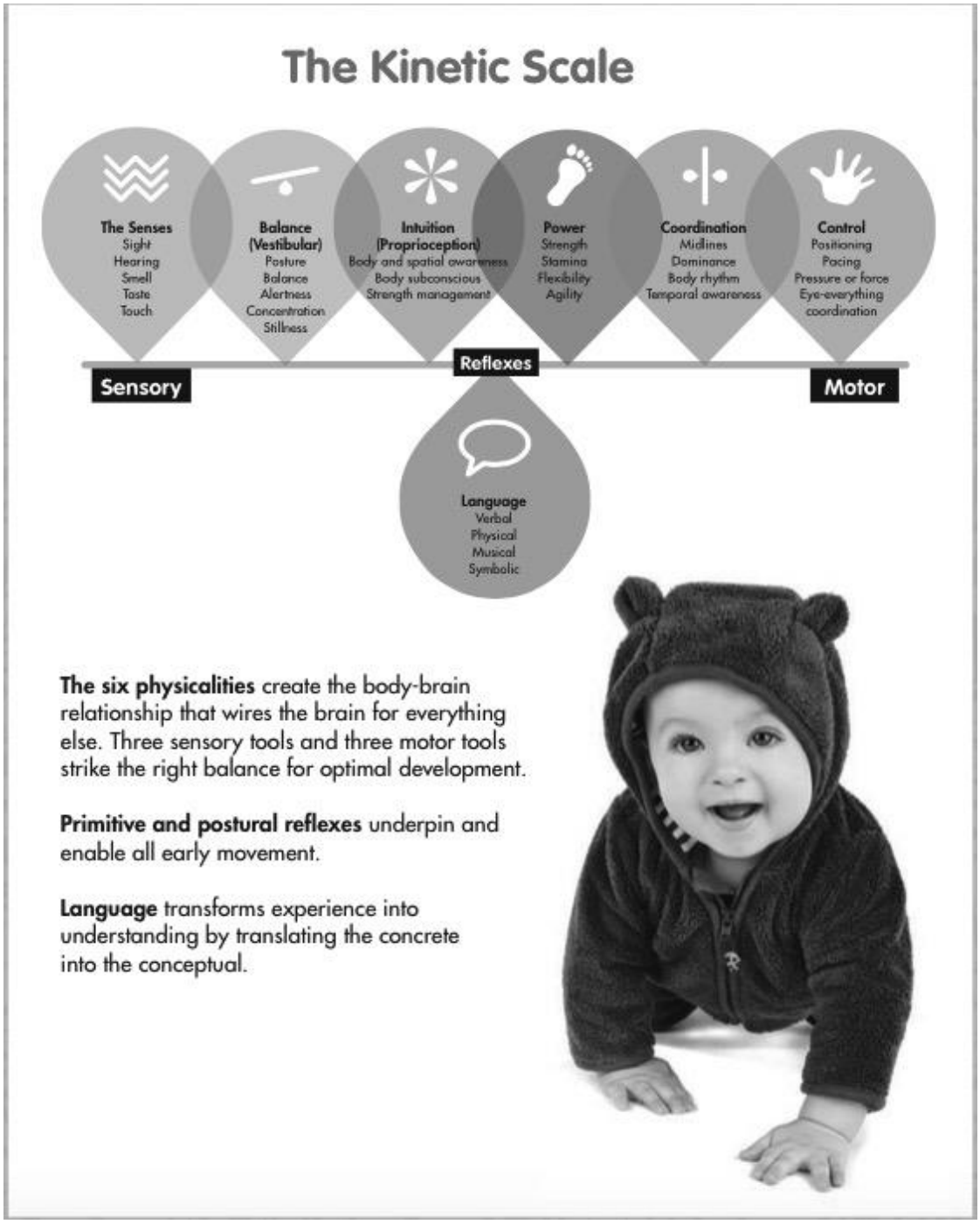
Seeing

- Visual experiences to help children discriminate between various shapes
- Children learn to recognize the shapes and distinguishing features of living creatures
- "I-Spy" to sharpen observation and labeling skills
- Shadows and sunlight shift throughout the day and allow for the opportunity to compare and contrast how items look in their various shadows
- Imagination is naturally encourage
  - Cloud gazing—"looks like"

Touching

- Children can freely touch and feel everything in their environment
- Cheeks feel the difference between a sharp wind and a summer breeze
- Feet feel different textures
  - Bare toes that distinguish between dirt, mud, sand and grass
  - Experience different terrains while running
- Leaves crunch beneath fingers and feet
- Sensory experiences abound outdoors

Honig, A.S. (2015). *Experiencing nature with young children: Awakening delight, curiosity, and a sense of stewardship.* Washington, DC: National Association for the Education of Young Children.



Connell, G., McCarthy, C. (2014). *A moving child is a learning child: How the body teaches the brain to think*. Minneapolis, MN: Free Spirit Publishing, Inc.

Risky Play

Benefits of Appropriate Risk-Taking:

- Helps children determine their own skills and decide if they are competent
  - Intuition (proprioception)
- Promotes resiliency
- Taking physical risks help children take risks in other areas (such as social or cognitive risks)

Dangers of Risk-Aversion

- Children are unable to practice risk-assessment
  - This leads to…
    - Timid children who are afraid to take any risks
      OR
    - Children who take too many risks with negative outcomes
      - Unable to recognize risk
      - Difficulty assessing potentially dangerous situations

Teachers Must Distinguish Between a Risk and a Hazard

- Risks help children learn
  - They are not outwardly dangerous but have the potential for children to get hurt
- A hazard is dangerous and cannot be assessed for risk
  - Adults are responsible for distinguishing hazards for children and protecting children from coming in contact with hazards
    - i.e., broken glass on a playground, sources of electricity near water, etc.

Almon, J. (2013, August 20). *The role of risk in play and learning*. Retrieved from http://www.communityplaythings.com/resources/articles/2013/the-role-of-risk-in-play-and-learning

The Teacher's Role in Risky Play

Teachers should…

- Teach children to think about safety rather than simple telling them what is unsafe
- Strive for an environment that is as safe as necessary (as opposed to as safe as possible)

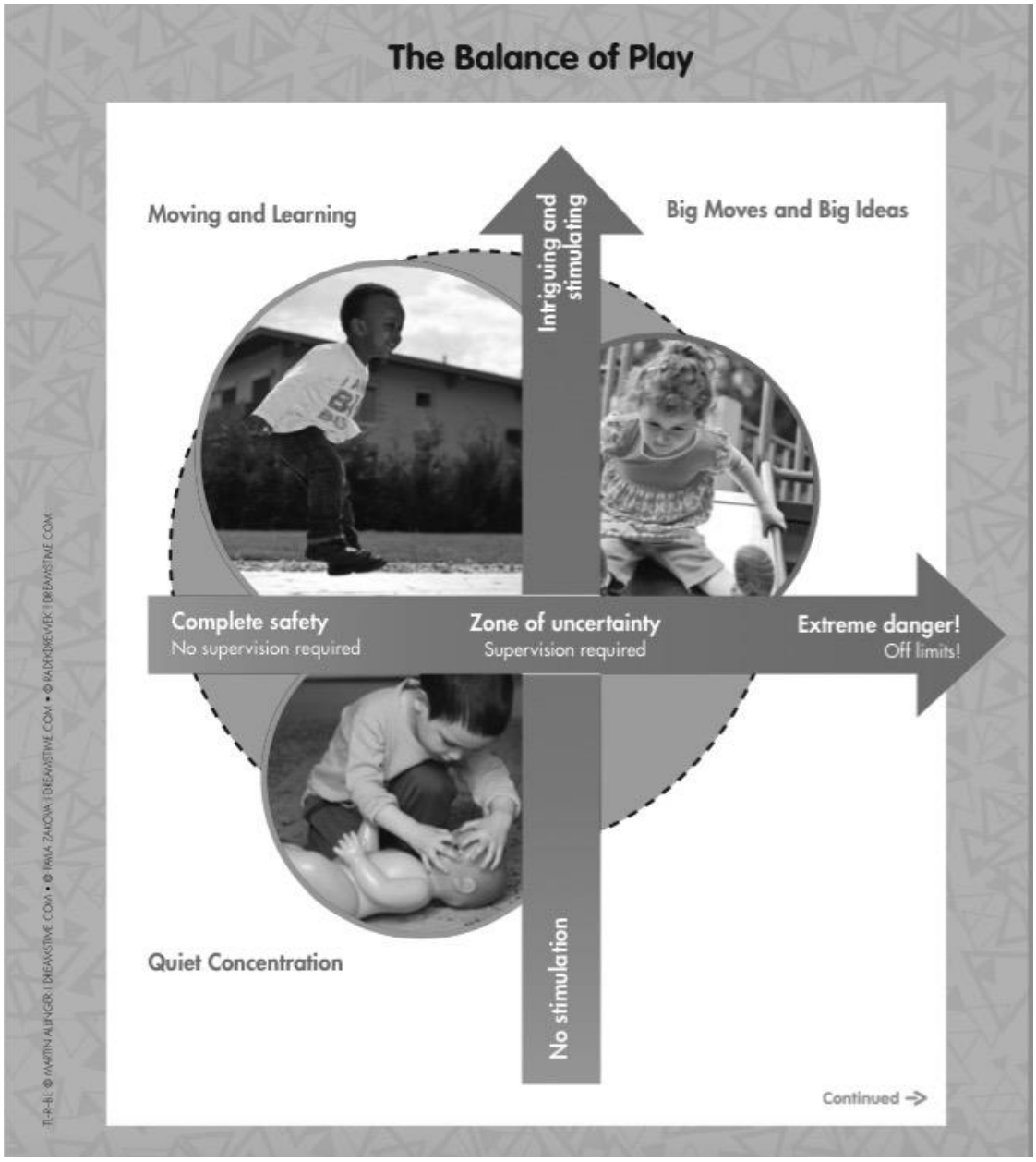
Teacher's managing risk:

- Pause
  - If children are about to engage in an activity that is potentially a problem but not immediately hazardous, teacher's should pause and take a step back
- Prompt
  - If you feel you need to step in after stepping back, do so but try not to make decisions for the child
  - Be a helper, not a leader
  - Guide the child in getting themselves out of a potentially dangerous situation
    - Example: A child is stuck. You want to step in and help get them out. Instead, take a step back and prompt them through guided questions such as, "I wonder how you will get unstuck. What if…"
    - Respect the child's intuition. Allow them to ask for help when they need it!

- Praise
  - When a situation is resolved, praise the child through specific examples of what they did right
  - Do NOT tell the child "good job;" this does not help the child when they come across the same problems in the future
  - Telling the child specifically what they did right increases the chances that they will remember and do the same in the future

Connell, G., McCarthy, C. (2014). *A moving child is a learning child: How the body teaches the brain to think*. Minneapolis, MN: Free Spirit Publishing, Inc.

Establishing Appropriate Risks



Connell, G., McCarthy, C. (2014). *A moving child is a learning child: How the body teaches the brain to think*. Minneapolis, MN: Free Spirit Publishing, Inc.

Rough-and-tumble Play

Adults often try to prevent children from engaging in rough-and-tumble play because they assume it often leads to real fighting between children; however, it only escalates into real fighting less than 1% of the time.

Rough-and-tumble, or big body play, is:

- Different from fighting
  - Coercion is not involved
  - Children voluntarily return for more
  - "Play face" on
    - Carefree
    - Relaxed
    - Smiling
    - Laughing
  - Children sustain it by taking turns
- "Play"
  - Enjoyable
  - Intrinsically motivated
  - Spontaneous and voluntary
  - Active engagement
- Developmentally appropriate
  - Contributes to physical development
  - Helps children develop social skills
  - Healthy risks
  - Connection between movement and brain development

Supporting rough-and-tumble play

- Model vigorous activity
- Prepare the environment for it
  - Identify and consider potential safety hazards
  - Leave ample space
  - Designate a particular area of the room for such play
- Have policies and rules in place to support this type of play while minimizing risk of injury
  - Specify type of supervision necessary
  - Determine when to intervene
  - Train staff
  - Discuss how to support it
  - Children can help develop rules for the classroom
- Supervise
  - Intervene if necessary
  - Pay attention to children's language and expression
  - Sportscast (See Handout)

- Communicate with families
  - Partnership
    - Avoid mixed messages
  - Understand why it is important
  - Include a policy in the parent handbook

Carlson, F. M. (2011). Rough play: One of the most challenging behaviors. *Young Children, 66*(4), 18-25.

Supporting Children's Development Outdoors

1. What do you want to accomplish in your next outdoor exploration with children?

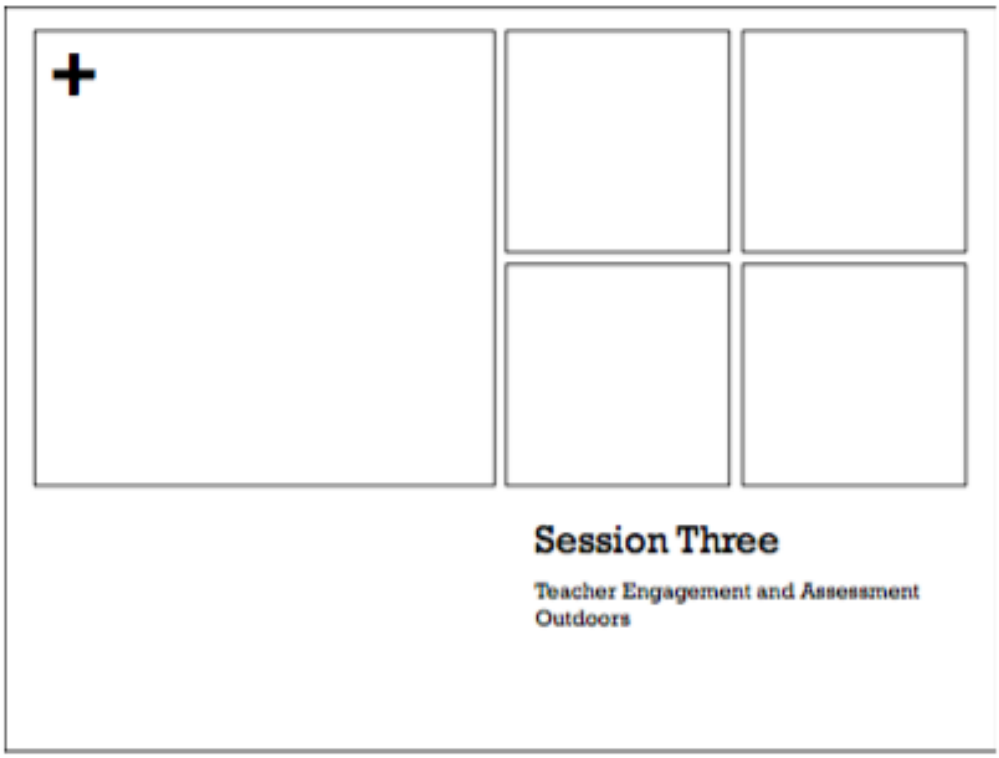
2. In what ways can you further the quality of children's engagement?

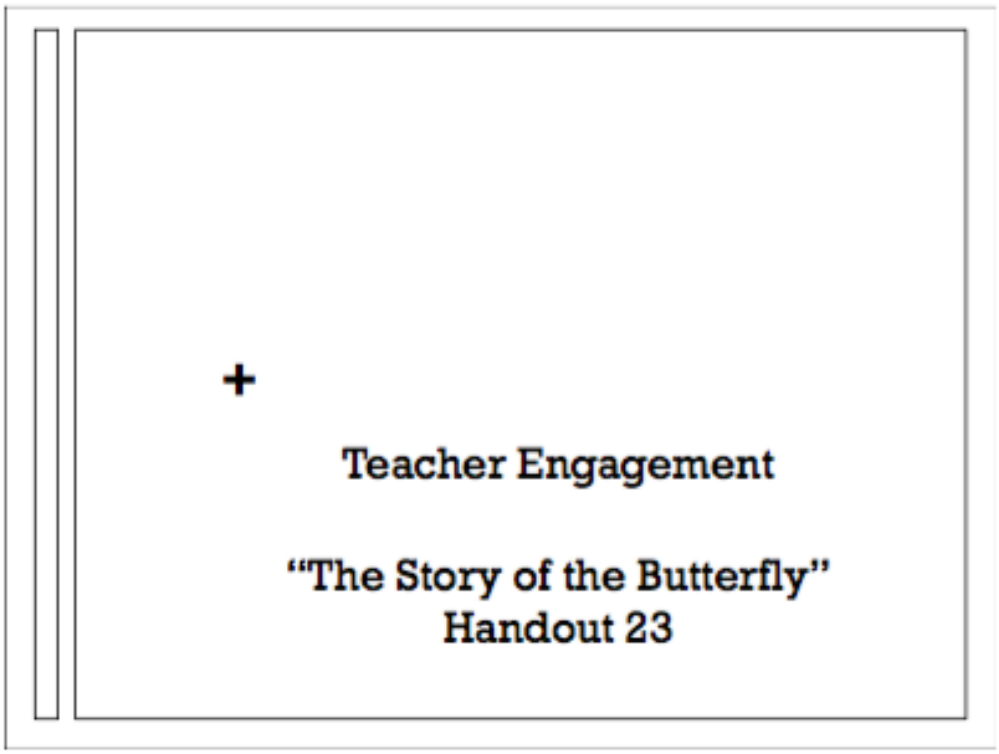
3. How can you extend the children's current interests/experiences?

Adapted from: Chalufour, I., & Worth,K. (2003) *Discovering nature with young children: Trainger's Guide.* St.Paul, MN: Redleaf Press.

APPENDIX I

SESSION THREE: TEACHER ENGAGEMENT


Session Three
Teacher Engagement and Assessment
Outdoors


Teacher Engagement
"The Story of the Butterfly"
Handout 23

Powerful Interactions

- Handout 24
- Build and deepen relationships with every child
  - Use children's names
  - Mirror talk
  - Talk one-on-one about topics that interest them
  - Show caring and respect
    - Join activities with permission
    - Give privacy
    - Engage in active listening
    - Set limits in supportive ways
    - Acknowledge and accept a child's emotions
- Be intentional in your teaching

Coccinella septempunctata

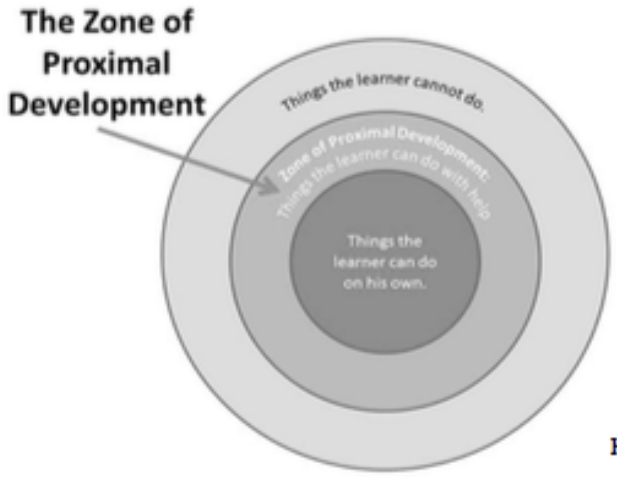
+ Powerful Interactions continued

- Move children's learning forward
  - Ask open-ended questions
    - Give them time to think of a response
  - Use interesting and varied language and vocabulary
  - Help make connections to familiar experiences, ideas, or info
  - Repeat and extend what the child says
  - Give specific info about their actions and creations
    - NOT "good job"
    - Offer manageable challenges that encourage further development

+ "Good Job" Alternatives

- Doesn't help children understand why what they did was good
- Preschoolers need to know
  - What they did
  - Why it worked
  - Or why it shows they are capable
- Instead…
  - Use sentence starters
    - "I noticed…" "Tell me more about…"
  - Notice and give feedback about efforts
  - Pay attention to detail
    - Be specific!

+ Scaffolding and the Zone of Proximal Development



Handout 25

+ Be Positive

- An effective preschool teacher strives to be…
  - Friendly
  - Patient
  - Kind
  - Gentle
  - Unrushed
  - Available
  - Accepting
- Which one do you struggle with most? Which one comes most naturally for you?

+ Ensure Positive Experiences

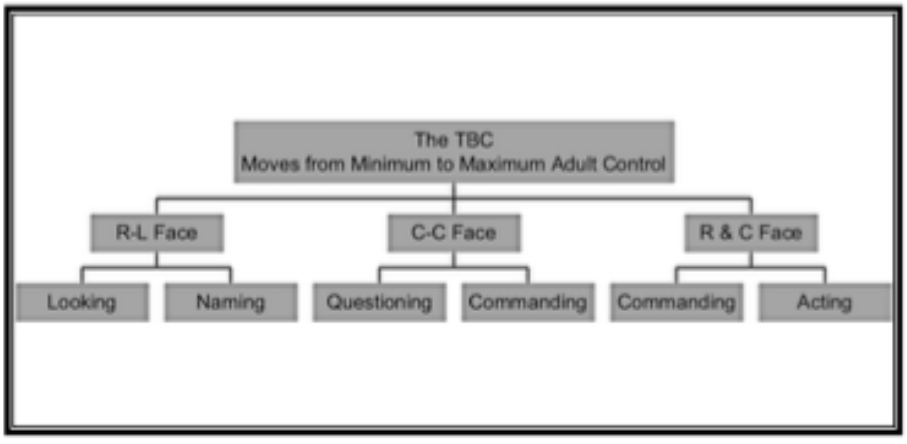
- Provide time alone with a teacher
- Offer warmth and affection
- Ensure individual care
- Be consistent
- Teach responsively
- Help children learn from everything
- Respect each child's disposition to learning
- Provide challenging experiences
- Reinforce socially acceptable behavior
- Establish a connection between home and school

+ Reflection Question

How do experiences with nature ensure positive experiences for children?

+ "Sportscasting" aka Selective Intervention—Handout 26

+ The Teacher Behavior Continuum (TBC)– Handout 27



The Story of the Butterfly
Attributed to Henry Miller

Retrieved from: http://www2.newton.k12.ma.us/~angela_downing/FOV1-0004E036/FOV1-0004D761/The Story of the Butterfly.pdf?Plugin=Metro

A young boy in India walked up to a guru – a wise man—who was sitting and looking at something in his hand. “What is that?” the boy asked.

“It’s a chrysalis,” the guru told him. “Inside is a butterfly. Soon the chrysalis will split and the butterfly will come out.”

“Could I have it?” asked the little boy.

“Yes,” said the guru, “but you must promise me that when the chrysalis splits and the butterfly is beating its wings to get out of the chrysalis, you won’t help it.” Don’t help the butterfly by breaking the chrysalis apart. Let the insect do get out by itself.”

The little boy promised, took the chrysalis, went home with it, and then sat and watched. Finally, he saw it begin to vibrate, move and quiver. At last the chrysalis split. Inside was a beautiful damp butterfly, frantically beating its wings against the chrysalis, trying to get out. The butterfly did not seem to be able to get free. The little boy desperately wanted to help. Finally he gave in and disobeyed the guru’s orders. He pushed the two halves apart and the butterfly sprang out. As soon as it got up into the air, it fell down to the ground and was killed. The little boy picked up the dead butterfly and, in tears, went back to the guru and showed him.

“You see, little boy,” the guru said, “You pushed open the chrysalis, didn’t you?” “Yes,” said the boy, “I did.”

“You don’t understand. When the butterfly comes out of the chrysalis, the only way it can strengthen its wings is by beating them against the chrysalis. It beats against the chrysalis so its muscles will grow. When you help it the way you did, you prevented it from getting strong enough to fly. That’s why the butterfly fell to the ground and was killed.

The Story of the Butterfly. (n.d.). Retrieved April 18, 2015, from http://www2.newton.k12.ma.us/~angela_downing/FOV1-0004E036/FOV1-0004D761/The Story of the Butterfly.pdf?Plugin=Metro

Powerful Interactions

Why are powerful interactions important?

1. They build and deepen meaningful relationships between teachers and children.
    a. Strong bonds between teachers and children encourage learning and development.
2. They help extend children's learning in small steps.
    a. Using interesting language
    b. Asking questions
    c. Engaging children
    d. Extending their thinking

To build and deepen relationships with each child…

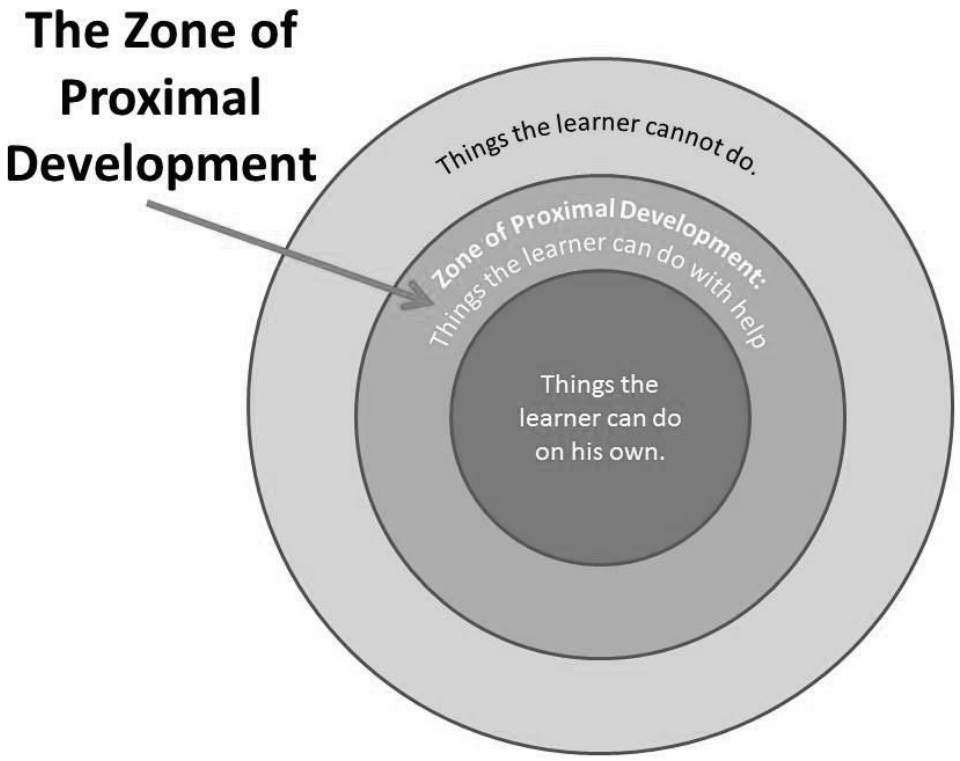
- Use children's names
    - Do not use pet names or generalizations; real names form a connection!
- Use "mirror talk" rather than saying "good job"
    - Comment on what children are doing and how they are doing it
    - Tell the child what it is that they are doing right
- Engage in one-on-one conversations with each child
    - Talk about topics that interest them as an individual so that they know they, too, are important
- Show care and respect
    - Only join children's activities with their permission
    - Be polite; model the behaviors you want to see in children
    - Listen attentively and practice active listening
    - Allow children privacy
- Set limits in ways that support, rather than hinder, children's curiosity
    - Create a safe, engaging environment
        - Limit things the children can't do by creating an environment that maximizes children's freedom
    - Minimize the number of rules
        - Rules should only protect the children, materials, and environment
- Acknowledge and accept children's emotions
    - Help children understand that all feelings are valid, however, they are not always allowed to act on their feelings (i.e., feeling angry is ok, hitting because you are angry is not ok)

To help extend children's learning…

- Provide reasons for how certain activities help their development
- Ask open-ended questions
  - Encourages children's thinking and language
  - Be sure to allow children enough time to form a response
- Use interesting and varied vocabulary
  - This supports children's language development and keeps children interested
- Help children make connections between different experiences and ideas
  - Encourages thinking about the past
- Repeat and extend what children say
  - Helps extend children's thinking and encourages language beyond their current capabilities
- Offer children manageable challenges with the materials they are using
  - Helps children move to the next step of development
  - But be careful not to take over children's play experiences!

Dombro, A., Jablon, J., & Stetson, C. (2010). Powerful interactions begin with you. *Teaching Young Children, 4*(1), 12-14.

Scaffolding and the Zone of Proximal Development



Joellen. (2014, November 12). The Zone of Proximal Development [Web log post]. Retrieved from http://www.cuppacocoa.com/the-zone-of-proximal-development/

Scaffolding and the Zone of Proximal Development…

- Requires the teacher to know where every child is at and determine what amount of support is needing
- Provides children with appropriate challenges that extend their learning
- Promotes learning that is teacher guided
- Does not mean the teacher does for the child what the child cannot do for themselves

Selective Intervention
(aka "Sportscasting")

Selective intervention involves teachers wisely choosing when to become involved in children's struggles and conflicts. It is more commonly known as "sportscasting," a term coined by infant specialist Magda Gerber that refers to teachers nonjudgmental, "just the facts" verbalization of children's conflicts and struggles.

When Sportscasting, a teacher does not relay judgment, shame, or blame to the children and does not attempt to solve the problem or provide solutions to the children. For instance, if two children are fighting over a toy, a teacher will step back and dictate what is happening to the children, allowing the children the opportunity to solve the problem for themselves. Teacher remains neutral but supportive of the children's efforts.

Sportscasting can also be applied to children struggling to solve a problem on their own; for instance, a child struggling to solve a puzzle or figuring out how to remove an item that appears stuck or out of reach.

Benefits of Sportscasting

- Children are able to think and learn more when we do less
- We empower children by trusting them to solve their own problems
- We are reminded not to judge or take sides
- Children are encouraged not to identify as either a victim or an aggressor
- Allows children to gain a clearer understanding of situations and teaches language, social and emotional development

Sportscasting is NOT enough when…

- Children's safety is compromised
- There is a pattern of destructive or disruptive behavior

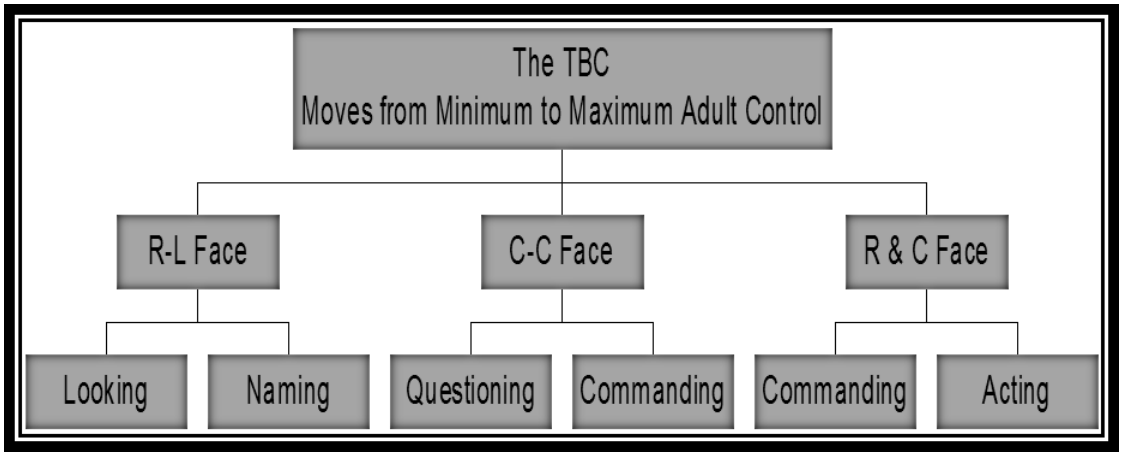
Lansbury, J. (2013, April 25). 5 Benefits of Sportscasting Your Child's Struggles. Retrieved from http://www.janetlansbury.com/2013/04/5-benefits-of-sportscasting-your-childs-struggles/

The "Do's" of Sportscasting

- Remain neutral and acknowledge both sides
- Protect the children
- Let children take toys (give them the opportunity to resolve conflicts)
- Keep an open mind
- Wait

Lansbury, J. (2013, September 5). Helping Toddlers Resolve Conflicts (Rules of Engagement). Retrieved from http://www.janetlansbury.com/2013/09/helping-toddlers-resolve-conflicts-rules-of-engagement

The Teacher Behavior Continuum (TBC)



On the TBC, teachers move from minimum to maximum power, allowing children to have more autonomy and control of the behaviors. On this continuum, teachers move from "looking" to "acting."

- R-L Face: The Relationship Listening Face (Minimum)
  - Looking—support children by remaining in close proximity to them
  - Naming—"sportscasting;" help children become aware of their own actions and feelings and those of others; teacher verbally labels children's actions without passing judgment
- C-C Face: The Confronting Contracting Face
  - Questioning—helps children reflect and come up with more appropriate actions
  - Commanding—teacher states what behaviors or actions she would like to see and allows the child/children the opportunity to do so
- R & C Face: The Rules and Consequences Face (Maximum)
  - Commanding—teacher's commands become more assertive
  - Acting—physical intervention or restraint

Teachers should move directly to the Rules and Consequences face when children are overwhelmed, hurting themselves or others, or damaging materials.

Wolfgang, C. (2005). *Solving discipline and classroom management problems: Methods and models for today's teachers* (6th ed.). New York: John Wiley and Sons.

APPENDIX J

SESSION THREE: ASSESSMENT OUTDOORS

+ Assessment Outdoors

+ The Teacher's Role in Observations

- Document Development
  - This does not just happen at the end of the quarter, semester, or school year!
  - Constant observation allows teachers to judge the current competencies of children and determine the amount of support warranted
- Supplement the curriculum
  - Use the children's current interests to develop activities
  - "Good teachers are keen observers. […] Good teachers are able to use the information they gather to augment the learning environment so that it can both nourish children and grow them."
- Organize a portfolio
  - A collection of observational records and work samples for one child that reflect developmental growth.
- Plan time to observe, record and file

"But I don't have time"

- Find it!
- Difficult at first → find a rhythm
- Well-honed skills enable teachers to tune into the ebb and flow of their class
- Flexibility and commitment are key
- May seem costly because it is time consuming but the rewards are worth it

Subjectivity vs. Objectivity

Subjective:	Objective:
▪ Based on biases	▪ Based on facts and visible behaviors
▪ Place excessive emphasis on one's own: ▪ Moods ▪ Emotional responses ▪ Attitudes ▪ Opinions ▪ Experiences ▪ Cultural and social norms	▪ Unbiased ▪ Not influenced by: ▪ Personal feelings ▪ Interpretations ▪ Prejudices ▪ Judgments
▪ "He gets bored easily."	▪ "He pushed off with his right leg."

Ask yourself: Would another observer agree with my descriptions?

+ Anecdotal Records—Handout 28

- An anecdote is one directly observed incident written in a short, concise, nonjudgmental narrative.
  - Specific incident or event that the teacher identifies as notable in the child's development
- PURPOSEFUL
  - Observe the incident→ identify it as valuable (developmentally significant)→ write it down
- Journalistic approach—who, what, where, when, and how
  - When and where not always necessary
- Uses descriptive words to build a visual image of the setting, summarize what happened, and tell about what was said and done in a nonjudgmental manner

+ Nature Notes

- See Handout 29
- Similar to an anecdotal record
  - More detailed
  - Can focus on multiple children
  - Looks at a variety of key skills over an extended period of time rather than one key skill

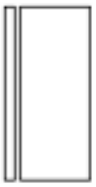
Learning Records

- See Handout 30
- Based on children's Science Inquiry
- Requires the teacher to consider whether the child is not yet doing the skill, the skill is emerging, or the child has mastered the skill
  - Teacher provides an anecdote of evidence
- Allows for future curriculum planning specific to where children are at in their development

Documentation Panels

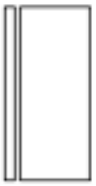
- Meant to be shared/displayed
- Highlights children's experiences through…
  - Simple anecdotes
  - Samples of the children's works
  - Photographs
- Should include information about early learning standards, curriculum goals, and developmental domains that are addressed
- Handout 31

+ Time Sampling



- Handout 34
- Onlooker- watches others without joining in
- Solitary- plays alone (3 feet or more away) or with objects that are different from children nearby
- Parallel- plays in proximity to others with the same or similar objects but does not interact
- Associative- imitates the actions of others playing close by with the same or similar objects, and talks about the activity with others, but the play is loosely organized
- Cooperative- coordinates actions and engages in back and forth play/interactions. Acknowledges the ideas of others and incorporates these ideas in their own play.

+ Let's Work Together



- What does your documentation tell you about the children?
- What could you do to enhance their learning experience? Consider: additional materials, changes to the environment, engaging more/other children, etc.
- What additional early learning standards or curriculum goals could be addressed through further changes?
- Handout 35

Anecdotal Records

Child(ren):_____ Date: _____

Context/Setting:

Concepts Explored/Evidence of Development:

Ideas for future activities to further development:

Adapted from: Chalufour, I., & Worth,K. (2003) *Discovering nature with young children.* St.Paul, MN: Redleaf Press.

Nature Notes

Teacher(s):	Child(ren)s Name(s):
Location:	Date/Time/Length of time observed
Key Skills observed and why you believe it is significant:	

Brief Description of Activity:

Descriptive Notes (the story/context): (continue on back for additional sketching/observation)

Miller, D. L. (2007). The Seeds of Learning: Young Children Develop Important Skills through Their Gardening Activities at a Midwestern Early Education Program. *Applied Environmental Education and Communication, 6*(1), 49-66. (Adapted)

Learning Record of Science Inquiry Skills

Child: _____ Birth Date: _____

Beginning Date: _____ Completed: _____

Science Inquiry Skill	Child Growth	Evidence
Engages, notices, wonders, questions	☐ Not yet ☐ Emerging ☐ Mastered	
Begins to explore, investigate	☐ Not yet ☐ Emerging ☐ Mastered	
Collects data	☐ Not yet ☐ Emerging ☐ Mastered	
Records and represents experience	☐ Not yet ☐ Emerging ☐ Mastered	
Reflects on experience	☐ Not yet ☐ Emerging ☐ Mastered	
Uses language to communicate feelings	☐ Not yet ☐ Emerging ☐ Mastered	
Shares, discusses, and reflects with others	☐ Not yet ☐ Emerging ☐ Mastered	

Adapted from: Chalufour, I., & Worth,K. (2003) *Discovering nature with young children.* St.Paul, MN: Redleaf Press.

Selecting a topic for a Documentation Panel

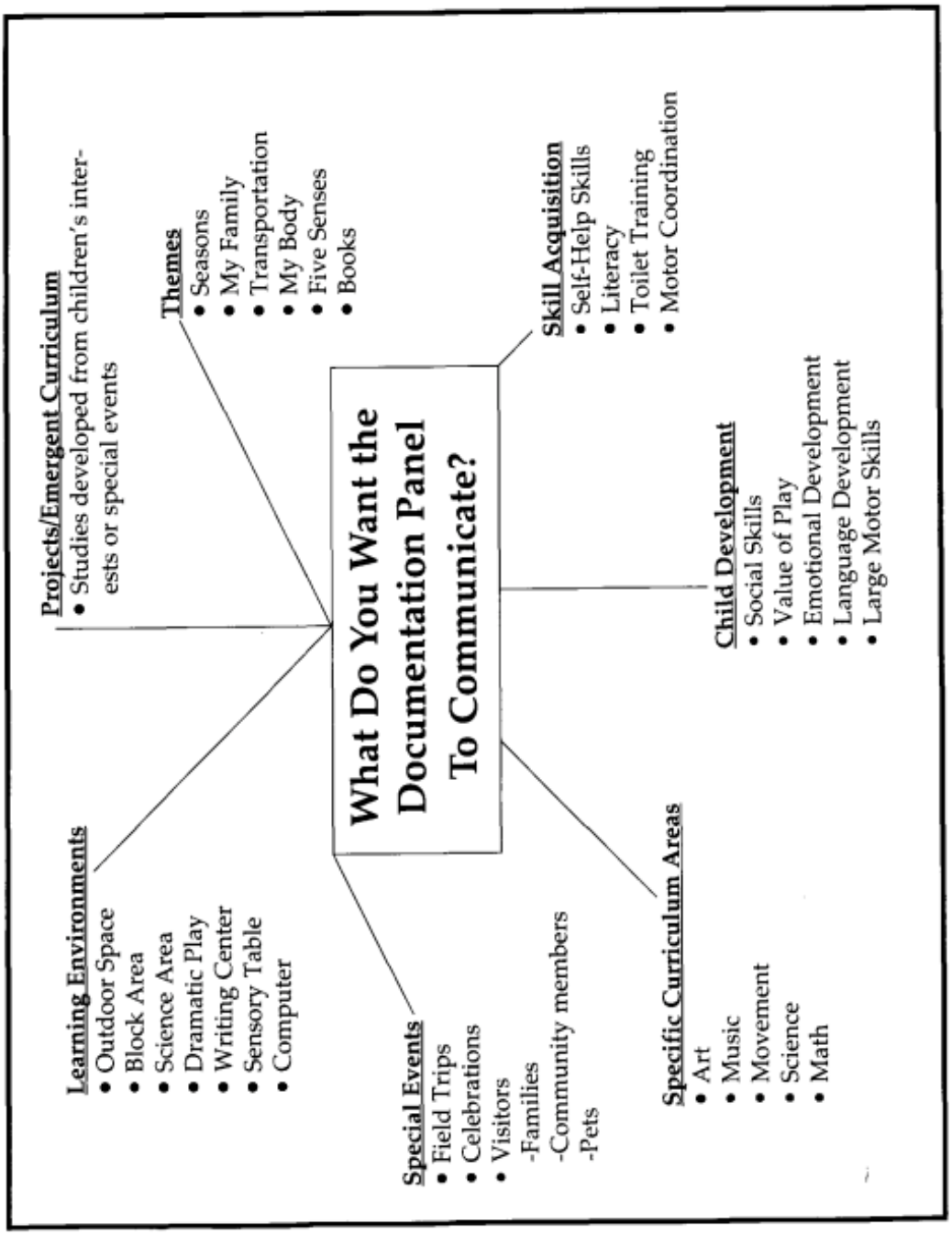


Figure 1

Keyes, T., Brown-Dupaul, J., & Segatti, L. (2001). Using documentation panels to communicate with families. *Childhood Education, 77*(4), 209-213.

Documentation Panels

1. **Step One**
   a. Decide what it is that you want to communicate
      i. Current project or theme
      ii. Special event
      iii. Skill
      iv. Child Development
   b. Begin collecting documents/evidence
      i. Children's work
         1. Drawings, graphs, etc. designed by the children
      ii. Anecdotal records
      iii. Information/quotes gathered during the investigation
         1. Quotes from children
         2. Quotes from books used regarding information collected
      iv. Curriculum webs
      v. Photographs
2. **Step Two**
   a. Select the best representations of the idea/theme of your panel
   b. Put it all together
      i. Determine your layout
         1. Make sure it is visually appealing
      ii. Select a title
      iii. Write captions below the children's work
         1. Select a font and font size that is attractive and easy to read/can be seen from a distance
      iv. Consider aesthetics
         1. Matte children's work/photographs
         2. Select colors/materials that enhance, not detract, from information/work displayed
         3. Consider less is more
      v. Consider the following questions:
         1. Does your documentation panel communicate your intended message?
         2. How many different types of documentation have you included?
         3. Is there anything you have forgotten to add?
         4. Will the panel encourage families to look at it?
3. **Step Three**
   a. Display the panel
      i. Place it in a location where parents/families can easily view it at their leisure without getting in the way of traffic

Keyes, T., Brown-Dupaul, J., & Segatti, L. (2001). Using documentation panels to communicate with families. *Childhood Education, 77*(4), 209-213.

Motor Development Checklist

Date: _____
Observer: _____
Child/Age: _____

Complete the checklist below. Indicate yes or no and take additional notes about why you checked either yes or no for the target behavior in question.

Target Behavior	Target Behavior Present		Notes
	Yes	No	
Can the child balance on one foot for up to 5 seconds?			
Can the child balance on one foot for up to 10 seconds?			
Can the child pedal on a bicycle?			
Can the child do jumping jacks?			
Can the child cut with scissors?			
Can the child cut along a straight line?			
Can the child draw a straight line?			
Can the child catch a ball with both hands?			
Can the child catch a ball with one hand?			
Can the child jump rope?			
Can the child skip?			
Can the child button a button?			
Can the child zip a zipper?			
Can the child kick a stationary ball?			
Can the child kick a ball while running?			
Can the child throw a ball overhand?			
Can the child jump forward at least one foot?			
Can the child jump forward at least two feet?			
Can the child build a tower of 10 or more blocks?			

Brief Conclusion:

Time Sampling of Children's Play Behaviors

Play Observation Scale Coding Sheet (2001)

Name of Child:_____ ID_____ Cohort___ Age___

Free Play Session _____

	Time Sample					
	:10	:20	:30	:40	:50	:60
uncodable						
out of room						
transitional						
unoccupied						
onlooker						
Solitary Behaviors:						
Occupied						
Constructive						
Exploratory						
Functional						
Dramatic						
Games						
Parallel Behaviors:						
Occupied						
Constructive						
Exploratory						
Functional						
Dramatic						
Games						
Group Behaviors:						
Occupied						
Constructive						
Exploratory						
Functional						
Dramatic						
Games						
Peer Conversation						
Double Coded Behaviors:						
AnxiousBehaviors						
Hovering						
Aggression						
Rough-and-Tumble						

Conversation/Interacting With: 1_____ 2_____ 3_____ 4_____ 5_____ 6_____

Rubin, K. H. (2001). *The Play Observation Scale (POS)*. University of Maryland, College Park.

Extending Documentation

1. What does your documentation say about the children you work with?

2. How could you enhance their learning further? Consider: additional materials, changes to the environment, engaging more/other children, etc.

3. What additional standards or curriculum goals could you address by making further changes?

The Power of Documentation in the Early Childhood Classroom: Handout 2: Extending Documentation. *Next for Teaching Young Children Handout, 2*(5). Retrieved from http://www.naeyc.org/files/tyc/file/Handout2Extendingdocumentation.pdf. (adapted)

APPENDIX K

SESSION FOUR: IMPLEMENTING AN OUTDOOR CLASSROOM

SESSION FOUR

Implementing an Outdoor Classroom

CONSIDERATIONS FOR DESIGN

- Adjacency
- Space/crowding
- Layout
- Separation
- Acknowledges all areas of development
- Materials/Equipment
- Storage
- Provides challenge
- Nature
- Philosophy

REFLECTION QUESTIONS

- What are the strengths of your environment? What important elements do you have for your exploration of nature?

- What challenges do you face? What important elements are you missing?

Handout 36

Chalufour, I., & Worth, K. (2003). *Discovering nature with young children (Trainer's guide)*. St. Paul, MN, Red Leaf Press.

GUIDING YOUR FOCUS

- Divide Goals into 3 categories:
  - Immediate
  - Short-term
  - Long-term

IMMEDIATE GOALS

- Balance between planning thoroughly and making changes as quickly as possible
- Small changes can help create momentum for change
- Immediate goals should:
  - Require little planning
  - No approval from others
  - Require little or no money
  - Be implemented right away
- Examples:
  - Increasing time spent outdoors
  - Take an activity outdoors for the first time

Nelson, E. (2012). Cultivating Outdoor Classrooms: Designing and Implementing Child-Centered Learning Environments. St. Paul, MN: Redleaf Press.

SHORT-TERM GOALS

- Goals that can be accomplished within a few months
- Require planning and expenses such as money, time and materials
- Examples:
  - Reconfiguring or expanding the sandbox area
  - Adjusting staffing for indoor/outdoor flow
  - Developing a plan for multiple classrooms to use the playground at once
- Short-term goals can also be useful for breaking down a long-term goal into smaller parts

Nelson, E. (2012). Cultivating Outdoor Classrooms: Designing and Implementing Child-Centered Learning Environments. St. Paul, MN: Redleaf Press.

LONG-TERM GOALS

- More comprehensive
- Use a larger amount of resources
- Typically carried out over several years
- Examples:
  - Redesigning and renovating parts of a play yard
  - Saving money/fundraising for large pieces of equipment/materials

Nelson, E. (2012). Cultivating Outdoor Classrooms: Designing and Implementing Child-Centered Learning Environments. St. Paul, MN: Redleaf Press.

LET'S WORK TOGETHER

- As a group, let's consider immediate goals and changes that can be easily made with little to no time or money
- Next, let's consider goals that may take longer and sketch out a rough Nature Action Plan

Considering Your Current Outdoor Environment

1. What are the strengths of your environment? What important elements do you have for your exploration of nature?

2. What challenges do you face? What important elements are you missing?

Nature Action Plan
Immediate Goals

1. Goals
   a.

   b.

   c.
2. Daily Schedule

3. Changes to the outdoor environment

4. Needed materials

5. Future activities

6. Children's current interests/skills to consider

7. Family Involvement options

Adapted from: Picturing Good Practice: Nurturing Nature: Handout 1: Nature Action Plan. *Next for Teaching Young Children Staff Development Guide, 2*(3). Retrieved from http://tyc.naeyc.org/NEXT/pdf/feb09/Handout1NatureActionPlan.pdf

Nature Action Plan
Short-term and Long-term Goals

1. Where are we at in terms of developing our Outdoor Classroom?

2. Where do we want to go? What is our ideal vision for our outdoor classroom/overall program?

3. What should our initial changes be?

4. How do we get there? Consider breaking down long-term goals into smaller, more achievable short-term goals.

5. How do we actually do it? Develop an action plan.

6. How will we know when we have succeeded? Consider creating some specific, achievable objectives.

7. What are some potential challenges we will face? How will we overcome them?

8. Who can help us meet our goals? Who can we consult with or seek help with funding, time, and/or materials?

Nelson, E. (2012). *Cultivating Outdoor Classrooms: Designing and Implementing Child-Centered Learning Environments*. St. Paul, MN: Redleaf Press.

Evaluating Outdoor Space for Exploration

It is important to evaluate children's environments and consider what is available for them to explore. This checklist is intended to evaluate spaces for exploration and can be used with a children's play yard, nearby parks, fields, forests, etc. When filling out this checklist, look for the following:

- Plants (flowers, weeds, bushes, trees, gardens, etc.)
- Small animals, insects (snails, ants, worms, etc.)
- Larger animals (birds, squirrels, bunnies, etc.)

Identify what you found, where you found it, and potential learning opportunities for children.

Location	What you found	Potential Learning Opportunities

Adapted from: Chalufour, I., & Worth, K. (2003) *Discovering nature with young children.* St. Paul, MN: Redleaf Press.

APPENDIX L

FLYER

Bringing the Wonder of Nature Back to Early Childhood Classrooms

Dates: Tuesday nights in October:
October 6, 13, 20 and 27
(4 sessions)

Time: 6:30- 8:30 p.m.

Place: Moreno Valley KinderCare

Topics will include:

- Introduction to the Outdoor Classroom
- Benefits of Nature and the Consequences of its Removal
- Developmental Theories
- Outdoor Curriculum and Activities
- Teacher Engagement
- Assessment Outdoors
- Implementing an Outdoor Classroom

Calling all early childhood teachers!

Get **free** training on implementing an outdoor curriculum and the benefits of nature to child development

- Why an outdoor curriculum?
  Research indicates that increasing children's time spent outdoors benefits their social/emotional, physical, and cognitive development, decreases stress, and promotes the development of an environmental ethic in children.
- What will you gain from attending these trainings?
  - Discover the benefits of nature for both teachers and children
  - Learn ways to implement an outdoor curriculum and activities
  - Learn how to assess and document children's learning outdoors

All materials will be provided for you. Dessert will be served during each training session. At the culmination of the trainings, teachers who attended all 4 sessions will receive a garden starter kit for use in their classrooms.

Please RSVP to heatherclaffey@gmail.com to participate.

APPENDIX M

INFORMED CONSENT

CALIFORNIA STATE UNIVERSITY
SAN BERNARDINO

College of Social and Behavioral Sciences
Department of Psychology

Informed Consent

You are invited to participate in a project designed to train early childhood teachers about the benefits of nature for children and to introduce ways to implement an outdoor classroom. This study is being conducted by Heather Claffey, M.A. candidate in Child Development, under the supervision of Dr. Laura Kamptner, Professor of Psychology, California State University, San Bernardino. This study has been approved by the Department of Psychology Institutional Review Board subcommittee, California State University, San Bernardino and a copy of the official Psychology IRB stamp of approval should appear on this consent form. The university requires that you give your consent before participating in this project.

In this project you will be asked to attend a series of four trainings, with each training being 2 hours in length, for a total of 8 hours. At the beginning of these trainings, you will be asked to complete a pre-training assessment to determine previous knowledge about the subject and a demographics form. Following the last training, you will be asked to complete a post-training assessment to determine knowledge gained during the trainings and a post-training evaluation form.

Your participation is completely voluntary and you may withdraw at any time. Information collected during the assessments and post-training evaluation will be kept completely anonymous. Your name will not be attached to your data, so none of your responses can be associated with you as an individual. There are no foreseeable risks for your participation beyond those of everyday life. Participation in the program may provide benefits to your career due to the nature of the training.

The group's results from these trainings will be used for Heather Claffey's master's thesis on training early childhood teachers about the benefits of utilizing an outdoor classroom. All completed assessments and evaluations will stored in a locked file drawer to which only the researcher has access.

If you have any questions regarding these trainings, please contact Dr. Laura Kamptner, Department of Psychology (kamptner@csusb.edu), Heather Claffey (hclaffey@csusb.edu) or the Department of Psychology Institutional Review Board subcommittee, of California State University, San Bernardino at psych.irb@csusb.edu.

I acknowledge that I have read the above information and freely consent to participate. I acknowledge that I am at least 18 years of age. By agreeing to participate in this study, I understand that I must obtain proper approvals from my employer to institute any new curriculum activities learned in this study.

Please indicate your consent by placing a check mark in the box below.

Participant's X _____

Date: _____

CALIFORNIA STATE UNIVERSITY
PSYCHOLOGY INSTITUTIONAL REVIEW BOARD SUB-COMMITTEE

APPROVED	10/6/15	VOID AFTER	10/6/16
IRB #	H-15PA-01	CHAIR	

The California State University
Bakersfield • Channel Islands • Chico • Dominguez Hills • East Bay • Fresno • Fullerton • Humboldt • Long Beach • Los Angeles • Maritime Academy
Monterey Bay • Northridge • Pomona • Sacramento • San Bernardino • San Diego • San Francisco • San Jose • San Luis Obispo • San Marcos • Sonoma • Stanislaus

REFERENCES

Almon, J. (2013, August 20). *The role of risk in play and learning*. Retrieved from http://www.communityplaythings.com/resources/articles/2013/the-role-of-risk-in-play-and-learning

Bailie, P. (2016a). Best practices in nature-based early childhood education. In D. Sobel (Ed.), *Nature preschools and forest kindergartens: The handbook for outdoor learning*, (pp. 211-228). St. Paul. MN: Redleaf Press.

Bailie, P. (2016b). Nature preschools: The cross fertilization of early childhood and environmental education. In D. Sobel (Ed.), *Nature preschools and forest kindergartens: The handbook for outdoor learning*, (pp. 211-228). St. Paul. MN: Redleaf Press.

Benson, J., & Miller, J. (2008). Experiences in nature: A pathway to standards. *Young Children, 63*(4), 22-28.

Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science, 19*(12), 1207-1212. doi:10.1111/j.1467-9280.2008.02225.x

Bredekamp, S. (1987). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8*. Washington, D.C.: National Association for the Education of Young Children.

Carlson, F. M. (2011). Rough play: One of the most challenging behaviors. *Young Children, 66*(4), 18-25.

Carson, R. (1965). *The sense of wonder*. New York: Harper & Row.

Centers for Disease Control and Prevention (CDC). (2011). *Data & statistics*. Retrieved from: http://www.cdc.gov/ncbddd/adhd/data.html

Chalufour, I., & Worth, K. (2003) *Discovering nature with young children.* St. Paul, MN: Redleaf Press.

Checkley, K. (1997). The first seven ... and the eighth - a conversation with Howard Gardner. *Educational Leadership, 55*(1), 8-13.

Cohen, M. (1984). *Prejudice against nature*. Freeport, ME: Cobblesmith.

Connell, G., & McCarthy, C. (2014). *A moving child is a learning child: How the body teaches the brain to think*. Minneapolis, MN: Free Spirit Publishing, Inc.

Copple, C., & Bredekamp, S. (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8*. Washington, D.C.: National Association for the Education of Young Children.

Crain, W. (2001). How nature helps children develop. *Montessori Life, 13*(3), 22.

Czalczyńska-Podolska, M. (2014). The impact of spatial playground features on children's play and activity forms: An evaluation of contemporary playgrounds' play and social value. *Journal of Environmental Psychology, 38*, 8-13.

Dombro, A., Jablon, J., & Stetson, C. (2010). Powerful interactions begin with you. *Teaching Young Children, 4*(1), 12-14.

Dyment, J. (2005). Green school grounds as sites for outdoor learning: Barriers and opportunities. *International Research in Geographical and Environmental Education*, *14*(1), 28-45.

Elkind, D. (2008). *Can we play? Greater Good.* Retrieved from http://greatergood.berkeley.edu/article/item/can_we_play

Ernst, J., & Tornabene, L. (2012). Preservice early childhood educators' perceptions of outdoor settings as learning environments. *Environmental Education Research*, *18*(5), 643-664.

Fjørtoft I. (2001). The natural environment as a playground for children: The impact of outdoor play activities in pre-primary school children. *Early Childhood Education Journal, 29*(2), 111-117.

Fjørtoft, I. (2004). Landscape as playscape: The effects of natural environments on children's play and motor development. (2004). *Children Youth and Environments, 14*(2), 21-44.

Gardner, H. (2011). *Frame of mind: The theory of multiple intelligences*. New York, NY: Basic Books.

Hachey, A. C., & Butler, D. L. (2009). Seeds in the window, soil on the sensory table: Science education through gardening and nature-based play. *Young Children, 64*(6), 42-48.

Hartle, L., Campbell, J., Becker, A., Harman, S., Kagel, S., & Tiballi, B. (1994). Outdoor play: A window on social-cognitive development. *Dimensions of Early Childhood, 23*(1), 27-31. EJ 499 977.

Helm, J. H., & Katz, L. (2011). *Young investigators: The project approach in the early years.* New York, NY: Teacher's College Press.

Hoffmann, E. (1969). Student teachers favor outdoor education. *Educational Horizons, 47*(4), 143-148.

Honig, A. S. (2015). *Experiencing nature with young children: Awakening delight, curiosity, and a sense of stewardship*. Washington, DC: National Association for the Education of Young Children.

Huttenmoser, M. (1995). Children and their living surroundings: Empirical investigations into the significance of living surroundings for the everyday life and development of children. *Children's Environments, 12*(4), 403-13.

Jaus, H. (1982). The effect of environmental education instruction on children's attitudes toward the environment. *Science Education, 66*(5), 689-692.

Joellen. (2014, November 12). *The zone of proximal development* [Web log post]. Retrieved from http://www.cuppacocoa.com/ the-zone-of-proximal-development/

Johnson, K. (2013). Montessori and nature study: Preserving wonder through school gardens. *Montessori Life, 25*(3), 36.

Joyce, R. (2012). *Outdoor learning: Past and present*. Maidenhead, England: Open University Press.

Kable, J. (2010, February 10). *Theory of loose parts* (Blog post). Retrieved from http://www.letthechildrenplay.net/2010/01/ how-children-use-outdoor-play-spaces.html

Kahn, P. (1997). Developmental psychology and the biophilia hypothesis: Children's affiliation with nature. *Developmental Review, 17*(1), 1-61.

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology, 15*(3), 169-182.

Kaplan S., & Kaplan, R. (1982). *Humanscape: Environments for people*. Ann Arbor, MI: Ulrich's.

Kenney, J. L., Militana, H. P., & Donohue, M. H. (2003). Helping teachers to use their school's backyard as an outdoor classroom: A report on the Watershed Learning Center Program. *Journal of Environmental Education, 35*(1), 18–26.

Keyes, T., Brown-Dupaul, J., & Segatti, L. (2001). Using documentation panels to communicate with families. *Childhood Education, 77*(4), 209-213.

Kuo, F. E. (2001). Coping with poverty: Impacts of environment and attention in the inner city. *Environment and Behavior, 33*(1), 5-34. doi:10.1177/00139160121972846

Lansbury, J. (2013, September 5). *Helping toddlers resolve conflicts* (Rules of Engagement) (Blog Post). Retrieved from http://www.janetlansbury.com/2013/09/helping-toddlers-resolve-conflicts-rules-of-engagement/

Leong, D. J., & Bodrova, E. (2012). Assessing and scaffolding: Make-believe play. *Young Children 67*(1), 28-34.

Lindsey, E. W. (2014). Physical activity play and preschool children's peer acceptance: Distinctions between rough-and-tumble and exercise play. *Early Education and Development, 25*(3), 277-294.

Little, H., & Wyver, S. (2008). Outdoor play: Does avoiding the risks reduce the benefits?. *Australian Journal of Early Childhood, 33*(2), 33-40.

Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder.* Chapel Hill, N.C.: Algonquin Books of Chapel Hill.

Mårtensson, F., Boldemann, C., Söderström, M., Blennow, M., Englund, J., & Grahn, P. (2009). Outdoor environmental assessment of attention promoting settings for preschool children. *Health & Place, 15*(4), 1149-1157. doi:10.1016/j.healthplace.2009.07.002

Marion, M. (2010). *Introduction to early childhood education: A developmental perspective*. New Jersey: Pearson.

Maynard, T., Waters, J., & Clement, J. (2013). Child-initiated learning, the outdoor environment and the "underachieving" child*. Early Years: An International Journal of Research and Development, 33*(3), 212-225.

McClintic, S., & Petty, K. (2015). Exploring early childhood teachers' beliefs and practices about preschool outdoor play: A qualitative study. *Journal of Early Childhood Teacher Education, 36*(1), 24-43.

McCurdy, L., Winterbottom, K., Mehta, S., & Roberts, J. (2010). Using nature and outdoor activity to improve children's health. *Current Problems in Pediatric and Adolescent Health Care, 40*(5), 102-117. doi: 10.1016/j.cppeds.2010.02.003

Miller, D. L. (2007). The seeds of learning: Young children develop important skills through their gardening activities at a midwestern early education program. *Applied Environmental Education and Communication, 6*(1), 49-66.

Miller, D., Tichota, K., & White, J. (2013). *Young children's authentic play in a Nature Explore classroom supports foundational learning: A single case study. Dimensions Educational Research Foundation*. Retrieved from http://www.dimensionsfoundation.org/findings.html.

Mooney, C. G. (2013). *Theories of childhood, second edition: An introduction to Dewey, Montessori, Erikson, Piaget & Vygotsky*. St. Paul, MN: Redleaf Press.

National Association for the Education of Young Children (NAEYC) and the National Association of Early Childhood Specialists in State Departments of Education (NAECS/SDE). (2002). *Early learning standards: Creating the conditions for success. A joint position statement*. Retrieved from http://www.naeyc.org/files/naeyc/file/positions/position_statement.pdf

Neill, P. (n.d.). Open-ended materials belong outside too! *HighScope Extensions, 27*(2),1-8. Retrieved from http://www.highscope.org/file/NewsandInformation/Extensions/ExtVol27No2_highrez.pdf

Nelson, E. (2012). *Cultivating outdoor classrooms: Designing and implementing child-centered learning environments*. St. Paul, MN: Redleaf Press.

Orr, D. (1994). *Earth in mind: On education, environment, and the human prospect.* Washington, DC: Island Press.

Pellegrini, A., & Smith, P. K. (1998). Physical activity play: The nature and function of a neglected aspect of play*. Child Development, 69*(3), 577.

Picturing good practice: Nurturing nature: Handout 1: Nature action plan. *Next for Teaching Young Children Staff Development Guide, 2*(3). Retrieved from http://tyc.naeyc.org/NEXT/pdf/feb09/Handout1NatureActionPlan.pdf

Plant Safety. (n.d.). Retrieved from: http://www.ohsu.edu/xd/outreach/oregon-poison-center/you-and-your-family/plantsafety.cfm

Planting Smart. (n.d.). Retrieved from http://www.naeyc.org/tyc/article/planting_smart

Rivkin, M. (1998). “Happy play in grassy places”: The importance of the outdoor environment in Dewey’s educational ideal. *Early Childhood Education Journal, 25*(3), 199-202.

Rubin, K. H. (2001). *The play observation scale (POS)*. University of Maryland, College Park.

Sobel, D. (1998). *Childhood and nature: Design principles for educators*. Portland, MN: Stenhouse Publishers.

Sobel, D. (2013). *Beyond ecophobia: Reclaiming the heart in nature education*. Great Barrington, MA.

Sobel, D. (2016). *Nature preschools and forest kindergartens: The handbook for outdoor learning*. St. Paul, MN: Redleaf Press.

Stipek, D. (2006). No child left behind comes to preschool. *The Elementary School Journal, 106(*5), 455-466

Tannock, M. (2008). Rough and tumble play: An investigation of the perceptions of educators and young children. *Early Childhood Education Journal, 35*(4), 357-361. doi:10.1007/s10643-007-0196-1

Taylor, A. F., Kuo, F. E., & Sullivan, W. C. (2001). Coping with ADD: The surprising connection to green play settings. *Environment & Behavior, 33*(1), 54-77.

Taylor, A. F., Kuo, F. E., & Sullivan, W. C. (2002). Views of nature and self-discipline: Evidence from inner city children. *Journal of Environmental Psychology, 22*(1-2), 49-63. doi:10.1006/jevp.2001.0241

Taylor, A., & Kuo, F. (2009). Children with attention deficits concentrate better after walk in the park. *Journal of Attention Disorders, 12*(5), 402-409.

Tennessen, C. M., & Cimprich, B. (1995). Views to nature: Effects on attention. *Journal of Environmental Psychology, 15*(1), 77-85. doi:10.1016/0272-4944(95)90016-0

The power of documentation in the early childhood classroom: Handout 2: Extending documentation. *Next for Teaching Young Children Handout, 2*(5). Retrieved from http://www.naeyc.org/files/tyc/file/Handout2Extendingdocumentation.pdf.

The story of the butterfly. (n.d.). Retrieved April 18, 2015, from http://www2.newton.k12.ma.us/~angela_downing/FOV1-0004E036/FOV1-0004D761/The Story of the Butterfly.pdf?Plugin=Metro

Tovey, H. (2007). *Playing outdoors: Spaces and places, risk and challenge*. Maidenhead: Open University Press.

Van den berg, A., & Van den berg, C. (2011). A comparison of children with ADHD in a natural and built setting: Nature and ADHD. *Child: Care, Health and Development*, *37*(3), 430-439.

Wade, K. (1996). EE teacher inservice education: The need for new perspectives. *Journal of Environmental Education, 27*(2), 11-17.

Waite, S., Rogers, S. & Evans, J. (2013) Freedom, flow and fairness: exploring how children develop socially at school through outdoor play. *Journal of Adventure Education & Outdoor Learning, 13*(3), 255-276.

Wells, N. (2000). At home with nature: Effects of “greenness” on children’s cognitive functioning. *Environment and Behavior, 32*(6), 775-795.

Wells, N., & Evans, G. (2003). Nearby nature: A buffer of life stress among rural children. *Environment and Behavior, 35*(3), 311-330.

Wells, N., & Lekies, K. (2006). Nature and the life course: Pathways from childhood nature experiences to adult environmentalism. *Children, Youth and Environments, 16*(1), 1-24.

Weston, P. (2000). *Friedrich Froebel: His life, times and significance*. Roehampton: University of Surrey.

White, R. (2004). Young children’s relationship with nature: Its importance to children’s development & the earth’s future. *White Hutchinson Leisure & Learning Group.*

Whitebook, M., Phillips, D., & Howes, C. (2014). *Worthy work, STILL unlivable wages: The early childhood workforce 25 years after the National Child Care Staffing Study.* Berkeley, CA: Center for the Study of Child Care Employment, University of California, Berkeley.

Wilson, E. O. (1984). *Biophilia*. Cambridge, MA: Harvard University Press.

Wilson, R. (2008). *Nature and young children: Encouraging creative play and learning in natural environments*. London; New York: Routledge.

Wirth, S., & Rosenow, N. (2012). Supporting whole-child learning in nature-filled outdoor classrooms. *Young Children*, *67*(1), 42-48.

Wolfgang, C. (2005). *Solving discipline and classroom management problems: Methods and models for today's teachers* (6th ed.). New York: John Wiley and Sons.

World Health Organization. (2014). Global health observatory (GHO) data. Retrieved from http://www.who.int/gho/urban_health/en/